Calhoun: The NPS Institutional Archive

DSpace Repository

Theses and Dissertations | 1. Thesis and Dissertation Collection, all items

2006-03

Modeling the U.S. border patrol Tucson sector for the deployment and operations of border security forces

Ordonez, Karina J.

Monterey, California. Naval Postgraduate School

http://hdl.handle.net/10945/2978

Copyright is reserved by the copyright owner.

Downloaded from NPS Archive: Calhoun

http://www.nps.edu/library

Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

MODELING THE U.S. BORDER PATROL TUCSON SECTOR FOR THE DEPLOYMENT AND OPERATIONS OF BORDER SECURITY FORCES

by

Karina Ordóñez

March 2006

Thesis Advisor:	Robert Bach
Thesis Co-Advisor:	Moshe Kress

Approved for public release; distribution is unlimited.

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** March 2006	**3. REPORT TYPE AND DATES COVERED** Master's Thesis	
4. TITLE AND SUBTITLE: Modeling the U.S. Border Patrol Tucson Sector for the Deployment and Operations of Border Security Forces.			**5. FUNDING NUMBERS**
6. AUTHOR(S) Karina Janine Ordóñez			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			**12b. DISTRIBUTION CODE** A
13. ABSTRACT (maximum 200 words) Illegal cross-border activity is a severe homeland defense and security problem along the international Southwest border. The issue of illegal human smuggling is not new to the United States-Mexico border or to law enforcement agencies; however, the phenomenon is rising and human smugglers are adjusting to law enforcement tactics. This thesis has three objectives. First, it describes and identifies the fundamental dimensions of U.S. Border Patrol operations in the busiest, most vulnerable section of the border. Second, it integrates prominent border security factors into a mathematical predictive model -- the Arizona-Sonora Border (ASB) Model – that provides an illustration of possible border security operational strategies and the outcome apprehension probability of migrants given the implementation of various operational strategies. Last, this thesis seeks to provide a comprehensive picture of the complex dynamics along the USBP Tucson Sector. This picture highlights the primary challenges facing policymakers in developing innovative policies that will minimize illegal cross-border activity and secure the homeland.			
14. SUBJECT TERMS Arizona; Arizona Border Control Initiative; border; border model; border security; model; Operation Gatekeeper; Operation Hold the Line; Operation Stonegarden; Tucson Sector; US Border Patrol; US-Mexico border.			**15. NUMBER OF PAGES** 91
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UL

NSN 7540-01-280-5500 Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

MODELING THE U.S. BORDER PATROL TUCSON SECTOR FOR THE DEPLOYMENT AND OPERATIONS OF BORDER SECURITY FORCES

Karina J. Ordóñez
Assistant Director for Strategic Policy, Arizona Office of Homeland Security
B.A., Arizona State University, 2002

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)

from the

NAVAL POSTGRADUATE SCHOOL
March 2006

Author: Karina Ordóñez

Approved by: Dr. Robert Bach
Thesis Advisor

Dr. Moshe Kress
Thesis Co-Advisor

Dr. Douglas Porch
Chairman, Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

Illegal cross-border activity is a severe homeland defense and security problem along the international Southwest border. The issue of illegal human smuggling is not new to the United States-Mexico border or to law enforcement agencies; however, the phenomenon is rising and human smugglers are adjusting to law enforcement tactics. This thesis has three objectives. First, it describes and identifies the fundamental dimensions of U.S. Border Patrol operations in the busiest, most vulnerable section of the border. Second, it integrates prominent border security factors into a mathematical predictive model -- the Arizona-Sonora Border (ASB) Model – that provides an illustration of possible border security operational strategies and the outcome apprehension probability of migrants given the implementation of various operational strategies. Last, this thesis seeks to provide a comprehensive picture of the complex dynamics along the USBP Tucson Sector. This picture highlights the primary challenges facing policymakers in developing innovative policies that will minimize illegal cross-border activity and secure the homeland.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I. INTRODUCTION 1
A. RESEARCH OBJECTIVES 2
B. METHODOLOGY AND RESEARCH 6
C. OPERATIONAL POLICY OPTIONS 7

II. BORDER SECURITY OVERVIEW 9
A. DEFINITION OF TERMS 9
B. WHO'S IN CHARGE? 11
C. USBP ORGANIZATIONAL OVERVIEW 12
D. CONTEMPORARY BORDER SECURITY OVERVIEW (1993-2004) .. 15
E. USBP TUCSON SECTOR CURRENT BORDER SECURITY STRATEGIES 19
1. Arizona Border Control Initiative 19
2. Operation Stonegarden 23
F. THE SOCIAL DIMENSION 24
1. Non-US Governmental Actors; Faith-based Community Efforts 24
2. Migrants Head North 26

III. BORDER SECURITY OR INSECURITY? 31
A. IMPLICATIONS OF INCREASING BORDER SECURITY RESOURCES TO THE USMB 31
B. THE *BALLOON EFFECT:* COMMUNITY POLICING APPLICABILITY TO BORDER SECURITY EFFORTS 32

IV. USBP TUCSON SECTOR OPERATIONS 37
A. USBP TUCSON SECTOR'S TACTICAL RESPONSE TO THE *BALLOON EFFECT* 37
1. USBP Tucson Sector Tactical Operations 39
2. Nogales Border Patrol Station 39

V. ARIZONA – SONORA BORDER MODEL 45
A. INTRODUCTION 45
1. Arizona-Sonora Border Model Theory 45
B. ARIZONA-SONORA BORDER (ASB) MODEL 48
1. Modeling Equations 52
C. MODEL EXTENSION AND APPLICATION 54

VI. CONCLUSION 65

LIST OF REFERENCES 69

INITIAL DISTRIBUTION LIST 73

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF FIGURES

Figure 1. Map of the U.S. Border Patrol Sectors 13
Figure 2. 2004 Migrant Deaths, Water Stations, and Rescue Beacons 28
Figure 3. Tucson Sector and Sonora Illegal Smuggling Routes 38
Figure 4. Systematic Representation of the Nogales Border Patrol Layers of Enforcement 41
Figure 5. Systematic Representation of the AZ-Sonora Border Model 46
Figure 6. Identified Most Frequent Illegal Human and Drug Smuggling Routes 47
Figure 7. Systematic Picture of the 13 Identified Illegal Routes into the USBP Tucson Sector 50
Figure 8. Arizona-Sonora Border Model Diagram 51
Figure 9. Number of IBCs that avoid USBP as a function of the apprehension and migration rates in Route 12, L_1. 61
Figure 10. Number of IBCs that avoid USBP as a function of the apprehension and migration rates in Routes 5 and 7, L_2. 62
Figure 11. Number of IBCs that avoid USBP as a function of the apprehension and migration rates in Route 8 and 10, L_3. 63

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

Table 1. U.S. Border Patrol Apprehension Statistics 1993 – 2004. 14
Table 2. Identification and Classification of Illegal Routes..... 48
Table 3. Notation Legend for the Arizona-Sonora Border Model 52
Table 4. ASB model Input Data: Migration Rates in each USBP Operational Layer.. 58
Table 5. ASB model Input Data: Migration Rates in each USBP Operational Layer.. 59
Table 6. ASB model Input Data: IBC Distribution among the 13 routes and number of IBCs evaded according to the ASB model. 60
Table 7. Modeling the USMB Summary 67
Table 8. Social Benefits Summary 67

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF SYMBOLS, ACRONYMS AND/OR ABBREVIATIONS

N	Number of illegal border crossers (IBCs)
t	Time parameter
L	U.S. Border Patrol Operational Layer
β	Apprehension Rate
m	U.S. Border Patrol Force Size
θ	Detection/Apprehension Intensity
ε	Rate at which Illegal Border Crossers Move from L_i to L_{i+t}
i	U.S. Border Patrol Operational Layer 0,1, 2 or 3
j	Identified Illegal Route j=1,…,13
0	Absence of Border Security
N_i (t)	Number of IBCs in Layer *i* at time t. *i*=1,…,3
N_i^J (t)	Number of IBCs that attempt to cross the border using route j in L_i at time t. *i*=1,…,3, j=1,…,13.
β_i	Apprehension probability of IBCs that have already crossed the border and are currently in L_i.
β_i^j	Apprehension probability of IBCs at the border in route j and L_i.
ε_i	Rate at which IBCs move from L_i to L_{i+t}
m_i	USBP force size at L_i off the border
m_i^j	USBP force size at the border in route j and L_i
F_i	The effect of the mix of USBP assets on the apprehension probability in L_i
$\overline{\theta}_i = (\theta_i(1),...,\theta_i(n))$	Resources vector in L_i
$\overline{\theta}_i^j = (\theta_i^j(1),...,\theta_i^j(n))$	Resources vector deployed at the border in route j and L_i

9/11	September 11, 2001
ABCI	Arizona Border Control Initiative
ASB	Arizona-Sonora Border
AZ	Arizona
BORSTAR	Border Patrol Search Trauma and Rescue Teams
CBP	United States Bureau of Customs and Border Protection
CCAMYN	Community Service Center for the Migrant and Needy
CIS	Citizenship and Immigration Services
DOD	United States Department of Defense
DHS	United States Department of Homeland Security
G-481	United States Border Patrol Agent's daily schedule
I-19	Interstate 19
IBC	Illegal border-crossers

ICE	United States Bureau of Immigration and Customs Enforcement
IDENT	Automated Biometric Identification System
INS	United States Immigration and Naturalization Services
OTM	Other than Mexican
POE	Port-of-Entry
SITE	Search for International Terrorist Entities
UAV	Unmanned Aerial Vehicles
U.S.	United States
USBP	United States Border Patrol
USD	United States Dollar (currency)
USMB	United States-Mexico Border

ACKNOWLEDGMENTS

A thesis requires many hours of research, writing, analysis, editing, and formatting. All are important aspects of a thesis, additionally this is not be possible without the support and understanding from my professors, professional peers, friends and family; therefore I am extremely grateful to help me through this endeavor. This was accomplished through the assistance of many individuals. However, I would like to express my specific thanks to the following:

- My family and friends for the love, care, support, and understanding during this thesis;
- Dr. Bob Bach for his extreme wealth of knowledge on border security and his accessibility and willingness to always encourage my thought process;
- Dr. Moshe Kress for his extreme wealth of knowledge in mathematics and his ability to create border control models, specifically the development of the Arizona-Sonora Border, which would not have been possible without his assistance;
- Dr. Lauren Wollman for her extreme patience and dedication for guiding me through the research and thesis process;
- The Arizona Governor's Office of Homeland Security for the opportunity to grow professionally and for their support throughout this program;
- The United States Border Patrol Tucson Sector for allowing me the opportunity to understand their operational structure;
- The United States Consulate in Nogales, Sonora, who assisted in organizing border tours and interviews for this thesis;
- The United States Department of Defense, Fort Huachuca for teaching me about the Intelligence Preparation of the Battlefield and its applicability to this thesis; and
- The Naval Postgraduate School for providing me the opportunity to contribute to border security efforts.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

For decades, the United States federal government has developed and implemented border security strategies to counter illegal cross-border activity. While some strategies have alleviated the influx of illegal immigration to certain geographic areas, increased border control in these locations have made other less controlled areas of the border more vulnerable. Rising crime rates, discarded debris, increased apprehension rates, and growing public scrutiny in these less secure areas provide clear evidence that border security is a social, economic, and a national security issue. Yet, despite the border security efforts of the Bush Administration and the U.S. Department of Homeland Security (DHS), the problem persists and continues to worsen, particularly along the Arizona-Sonora border (ASB).

The issue of illegal cross-border activity is not new to the United States-Mexico border (USMB), and specifically to the law enforcement agencies in these regions. More importantly, the phenomenon is expanding as smugglers and traffickers adjust to the law enforcement tactics to counter it. Bandits are driven by financial gain, and generally ignore the burden their activities impose upon local communities. From a homeland security and defense perspective, terrorists with weapons of mass destruction could possibly penetrate the porous border in much the same way that unauthorized migrants and contraband does.[1] Developing strategies that could result in a solution to the problem of illegal cross-border activity along the USMB is of critical importance in securing the homeland.

Various agencies at all levels of government have an integral part in securing the homeland. The most important stakeholder in border security is the U.S. Border Patrol (USBP), whose mission is to prevent terrorists and terrorist weapons from entering the country.[2] However, while clearly playing a critical role, law enforcement is not the sole bearer of this responsibility. As demonstrated by the efforts of certain faith-based

[1] Although there is no evidence of such occurring, the probability does exist.

[2] Robert C. Bonner, "National Border Patrol Strategy: Message from the Commissioner" (Washington, D.C.: U.S. Customs and Border Protection, Office of Border Patrol and the Office of Policy and Planning, September 2004).

organizations, other non-government entities can also make an important contribution. Cultural patterns along the USMB also influence U.S. policies and contribute to the effectiveness of border security strategies.

A. RESEARCH OBJECTIVES

This thesis has three objectives. First, it describes and identifies the fundamental dimensions of U.S. Border Patrol operations in the busiest, most vulnerable section of the border. The research provides a workable definition of key concepts related to border security, identifies the principal stakeholders and jurisdictional authorities along the Southwest international border, and reviews contemporary border security strategies and border security operations from 1993 to 2004. Much of the focus is on the USBP Tucson Sector. The Tucson Sector accounts for 43 percent of the Nation's illegal apprehensions – clearly the busiest area of the U.S. perimeter.[3] This section also identifies the current USBP Tucson Sector operational structure, currently employed border security resources and infrastructure, illegal border-crossers (IBC) modus operandi, and the most frequently used and known illegal crossing routes into the USBP Tucson Sector.

The second objective is to integrate prominent border security factors into a mathematical predictive model -- the Arizona-Sonora Border (ASB) Model – that provides an illustration of possible border security operational strategies and the outcome apprehension probability of migrants given the implementation of various operational strategies. The model generates information about current USBP tactics used to counter the "balloon effect,"[4] which is observed when applying force to the ASB. Specifically, this model provides a much more rigorous thinking process to help develop operations that maximize efficiency in a border security system.

---

[3] U.S. Border Patrol, "Apprehension Statistics 1993 -2004: Data Presented in Actual Numbers and as a Percentage of Total Southwest Apprehensions," (http://www.lawg.org/docs/apprehension%20stats.pdf accessed June 20, 2005).

[4] "Balloon effect" is used by border security experts to explain the impact phenomenon of applying force to the international boundary. For example, when you apply force at one location an influx of illegal cross-border activity will relocate around the enforced area, as if the enforced area is an impenetrable bubble that one must go around.

Third, the thesis seeks to provide a comprehensive picture of the complex dynamics along the USBP Tucson Sector. This picture highlights the primary challenges facing policymakers in developing innovative policies that will minimize illegal cross-border activity. These challenges range in reaching across disciplines and jurisdictions to the cultural, law enforcement and humanitarian concerns that illegal immigration bring to the USMB.

Illegal human smuggling and trafficking pose serious criminal problem along the international Southwest border and can potentially threaten national security. However, the issues of illegal human smuggling and trafficking are not new nor are they unique to the USMB. The U.S. shares approximately 5,500 miles of international border with Canada and an additional 2,000 miles with Mexico. Both of these international boundaries include bodies of water and rugged terrain, which make it difficult to secure the international region from people illegally entering the U.S. Consequently, individuals who cannot enter our nation legally opt to pay human smugglers to guide them on their journey to U.S. soil.

Interpol recognizes that "[s]muggling networks seem to focus more and more on Central and South America where they maintain the necessary links to Mexican people smugglers in order to move the illegal migrants via Mexico to North America."[5] Likewise, the CBP identified over seventy-two Other-Than-Mexican (OTM) nationals who cross the USMB, including citizens from countries identified by the U.S. State Department as state sponsors of terrorism.[6] Arguably as the U.S. government adds security measures to ports of entry (POE) and enforces immigration laws, more people, including terrorists, employ illegal border-crossing services to enter the U.S. With the implementation of additional security measures or barriers to entry, terrorists may seek funding or assistance to infiltrate U.S. borders from illegal smugglers or "coyotes" as they are known along the border.

---

[5] Interpol, "People Smuggling," December 6, 2004, (http://www.interpol.int/public/THB/PeopleSmuggling/Default.asp, accessed December 6, 2004).

[6] Kevin Stephens, US Border Patrol, "Plan Arizona and Proposed US Border Patrol Projects Presentation" (Tucson, AZ: Borderland Management Task Force Meeting, March 4, 2004).

Coyotes may begin to use financing tactics similar to those used by those involved in drug trafficking to support terrorist groups and their objectives. The financial tactics of Coyotes parallel the tactics of those involved in narco-terrorism, where the funding of terrorist activities comes from monies acquired from drug trafficking. The Council on Foreign Relations noted that "[m]ore funds reportedly come from illegal activities conducted by al-Qaeda or on its behalf, including smuggling, drug trafficking, and illicit trade."[7] If illegal human smuggling becomes a funding source for terrorism, then one can argue that illegal smuggling constitutes a form of terrorism. Given the above criteria, law enforcement must recognize this new form of terrorism as "smuggler-terrorism." If law enforcement fails to recognize the shift in Coyotes tactics, the current border insecurity situation will become a greater national security dilemma. The ASB model can be modified to integrate these types of changes in IBCs tactics. Integrating these changes into the model serves as a thinking tool to identify operational plans to combat these shifts before the problem becomes of national significance.

Post-September 11, 2001 border security strategies became part of a greater national vision of protecting the homeland from potential entry of terrorists and weapons of mass destruction. However, this notion that became of greater public concern after 9/11 was already on the minds of several political leaders, such as Texas Congressman Lamar Smith, who stated, "[o]ne of the most dangerous threats to our national security is the risk of a terrorist crossing our […] border undetected. This happened in 1997 when Gazi Ibrahim Abu Mezer crossed the Northern Border and attempted to blow up the New York subway system."[8] As was then reinforced in the National Homeland Security Strategy viewing border security as a national critical mission area.[9] The traditional concerns of illegal cross-border activity of rising crime in border communities; drain on social resources, economic concerns was augmented by the fear of another terrorist attack

---

[7] Council on Foreign Relations, "The Money: Drying Up the Funds for Terror," http://www.cfrterrorism.org/responses/money.html (accessed December 6, 2004).

[8] Lamar Smith (U.S. House of Representatives), Opening statement to the Subcommittee on Immigration, Border Security and Claims, *Drug Smuggling, Illegal Immigration and Terrorism on The Border between the United States and Canada*, April 14, 1999, http://www.house.gov/judiciary/smit0414.htm (accessed December 6, 2004).

[9] Office of Homeland Security, "National Strategy for Homeland Security" (Washington D.C., July 2002), 22.

on U.S. soil. Arizona Senator Kyl posed on August 27, 2004, "Why wouldn't those seeking to attack America be tempted to join the hundreds of thousands already illegally entering from Mexico?"[10]

With these new security challenges in mind, President Bush, President Fox and Prime Minister Martin signed on March 23, 2005 the Security and Prosperity Partnership (SPP) of North America, a tri-national joint statement on a common security strategy. The SPP is a cooperative agreement between Canada, Mexico and the United States to protect North America from any foreign threat, secure our shared borders by streamlining the efficient movement of goods and low-risk travelers through our borders.[11] This agreement provides a common security strategy to bolster economic growth, competitiveness and the quality of life in North America.

Understanding the complex dynamics of the USMB and identifying how to maximize border security efforts represent a fundamental capability for policymakers who seek to build a new doctrine of homeland security to achieve an efficient common security strategy. This all-encompassing understanding, however, includes an appreciation of the way in which illegal crossings of the borders generate widespread chaos, much of which does not rise to the level of a national security threat, but which provides a fertile context for those risks to take root and flourish. For instance, illegal border crossings generate violent crimes in local communities and against IBCs attempting to enter the U.S. will decrease (i.e., assault, rape, murder, kidnappings, etc.), thereby alleviating hospital resources in the Southwest. Moreover, by reducing illegal immigration, border communities will experience a decrease in crime and a subsequent improvement in quality of life. By encouraging the U.S. government to identify resource inefficiencies and reallocate these accordingly along the ASB. Additionally, the U.S. economy would benefit by disrupting a black market of untaxed revenues created by the revenues sent to foreign countries to support migrant families. Ultimately, the U.S. government would effectively identify the entry of people, goods and services that cross

[10] Senator Jon Kyl, "Arizona: a 'Terrorist Corridor?'," *The Arizona Conservative, Guest Opinion,* August 27, 2004, http://www.azconservative.org/Kyl_TerrorismCorridor.htm (accessed December 6, 2004).

[11] The White House, "Fact Sheet on the Security and Prosperity Partnership on North America" (Washington D.C.: Press Secretary Office, March 23, 2005), http://www.whitehouse.gov/news/releases/2005/03/20050323-4.html (accessed January 11, 2006).

the nation's border: all important factors in furthering the National Homeland Security Strategy and the SPP. It is important to note that the mathematical model offered in this thesis with minor modifications can be applied to the entire U.S.–Mexico international boundary.

B. METHODOLOGY AND RESEARCH

The methodology used for this thesis is a mixture of a general qualitative analysis of policy options and specific modeling of the USBP operations in the Tucson Sector. The intention is to create, with the assistance of the Naval Postgraduate School staff, a model that allows for the simulation of various scenarios to identify the impact of different operational deployment and employment of border security resources in order to minimize illegal cross-border activity prior to implementing policies. This model integrates existing border security initiatives and provides information for planning new border control strategies and policies. Specifically, this model focuses on the ASB, the Tucson Sector, and designs the "border" using current USBP layers of defense strategy with identified known illegal entry routes to the USBP Tucson Sector.[12] This "border" allows the assessments to be as accurate as the possible, given the current border security system and the border's current situation. Then, the model itself is analyzed to ensure applicability, with small modifications, to other areas of the border. This, in turn, predicts the border control effectiveness of various border security strategies given illegal cross-border migration patterns, while offering actionable recommendations to secure the USMB.

The research plan incorporates information from two types of sources: the U.S. government, Mexican officials and community leaders. First, U.S. government sources include documents and personnel interviews. U.S. government documents, from 1993 to present, provide an overview of contemporary border security strategies and policies for the current directives of countering illegal activity along the Southwest international border. In addition, the author interviewed USBP to provide information regarding

[12] This information was obtained by the author through various interviews with USBP agents, Mexican Grupo Beta agents, community leaders and border community residents, in addition to touring various locations on both sides of the Arizona-Sonora border.

operational structure, deployment of resources and infrastructure along the ASB. Second, Mexican sources include documents and personnel interviews from Mexican officials and community leaders to provide an understanding of the avenues of approach used by human and drug smugglers to enter the U.S. illegally.

The information provided through this research will be incorporated into the "border" model to illustrate potential shortfalls in U.S. border security strategies and facilitate policymakers to develop more effective recommendations to the current national strategies. This model allows strategists to simulate different scenarios and think of innovative strategies to prevent illegal cross-border activity that are most effective given the most current intelligence analysis of migration. The scope of this model is to demonstrate that a predictable analysis of the ASB is feasible and can be used to improve national border security tactics and, develop potential scenarios prior to the implementation of future strategies.

C. OPERATIONAL POLICY OPTIONS

This thesis analyzes current border security operational procedures and provides new recommendations to secure the USMB. In an effort to capture the most accurate assessment for current international issues, the author focuses on USBP's operational policies during the past decade. This policy review provides a comprehensive picture of the strategy USBP employs to deter illegal cross-border activity, which in turn identifies parameters and variables for the development of a "border" model. This model will provide an operational picture to optimally deploy border security resources to counter illegal cross-border activity. The operational policies under consideration all involve the philosophy of "prevention through deterrence" with a force multiplier of border security resources. They are as follows:

Operation Hold-the-Line – The USBP implemented an El Paso, Texas Border crackdown in 1993 and has steadily increased its resources in that region ever since.

Operation Gatekeeper – The USBP implemented a California - Baja California Border crackdown in 1994 and has steadily increased its resources in that region ever since. This initiative entailed more than ten years of constantly adding force, infrastructure, and resources to the border.

Operation Safeguard – The USBP implemented a Nogales Border crackdown in 1999. This operation steadily increased resources in Nogales.

Arizona Border Control Initiative – The DHS has implemented this strategic operational initiative in 2004 along the ASB. This initiative created partnerships with law enforcement agencies at all levels of government and added more personnel on the ground, and technological surveillance measures.

Operation Stonegarden – The DHS implemented this initiative to provide resources to local, Tribal and State law enforcement agencies to assist with border security efforts. This operation is ongoing and concurrent with the Arizona Border Control Initiative.

An analysis of the counter illegal immigration process and the policies that guide the border security operations along the international USMB will help policymakers evaluate different approaches to securing the border. In turn, this evaluation will lead to decisions about new and different approaches to border control, immigration and homeland security, including a proposed predictive model to assist policymakers and operational planners in the USBP Tucson Sector. The next chapter will provide an overview of contemporary border security efforts and how these policies have affected the ASB.

II. BORDER SECURITY OVERVIEW

Prior to 9/11, the USBP security efforts along the international border were well established. Since then, however, the constant flow of unauthorized migrants and "[t]he increasing mobility and destructive potential of modern terrorism has required the United States to rethink and rearrange fundamentally its systems for border […] security." [13] This critical need to rethink border systems, particularly along the Southwest border, leads critics to ponder, who is primarily responsible for securing our borders? What is the USBP doing to secure the border given this new threat? This chapter will answer these questions for the benefit of policymakers by providing a comprehensive overview and framework of the current border security system. With this information, they will be able to better assess and re-evaluate current operational plans; develop and implement new border strategies; and increase efficiency by redeploying scarce resources.

A. DEFINITION OF TERMS

For purposes of this thesis, the definition established by the 1983 La Paz Agreement between the U.S. and Mexico, which defined the international border between the countries, will be used to articulate functional definitions. The "border" refers to the geopolitical divide between the U.S. and Mexico. However, for this thesis, the "border" is specifically the international border between the State of Arizona, U.S. and the State of Sonora, Mexico. The 377-mile ASB is a portion of one of the world's busiest international boundaries, and as such, an overwhelming number of cross-border illegal and legal activities occur daily.

Although there is a geo-political border, a full understanding of the complexities and dynamics of the ASB requires recognition and analysis of the communities on both sides of the border. The economic dependency, environmental and cultural ties between these border communities adds a multifaceted dynamic and dimension to understanding the ASB. This cultural, social, and economic region has received recognition from governments and the public; therefore, to encompass these intrinsic interdependencies,

[13] Office of Homeland Security, *National Strategy for Homeland Security* (Washington D.C., July 2002), 21.

the term "border region" was officially recognized in 1983. Border region includes 100 kilometers (67 miles) north and south of the geopolitical divide between the U.S. and Mexico.[14] The border region has a population of approximately three million people, and it continues to grow exponentially as compared to the national average of both the U.S. and Mexico.[15] This includes all of the cities, town, communities, tribes, and counties within this area, which share common challenges.

The enactment of the North American Free Trade Agreement (NAFTA), strengthens the U.S. and Mexico global trading partners relationship. Likewise, the State of Arizona and Sonora have a long history of binational partnerships, where Sonora is Arizona's largest trading partner, representing $13 billion in trade in 2003 and a global gateway for both legal and illegal flows of people, goods and services.[16] From a homeland security perspective, the State of Sonora is also the geographic first "line of defense" for the State of Arizona. As terrorists attempt to enter the U.S. illegally through the ASB, law enforcement efforts in Sonora can assist to prevent these individuals from successful entry, and as a result must be a strong partner in homeland security efforts. As directed in the *National Strategy for Homeland Security*, "the United States will work with traditional allies and new friends to win the war on terrorism."[17] Homeland security in this region requires the thorough cooperation of communities and governments on both sides of the border. Risk from terrorism, certainly, and from all-hazards that occur on one side of the border have a direct, immediate impact on the other side. Border communities in Arizona, Sonora, and elsewhere along the border are vital binational partners in the fight for security. Therefore, this region must be considered as one common population on two sides of an

---

[14] La Paz Agreement defined the border region as 100 km north and 100 km south of the U.S.-Mexico International border. *See* "La Paz Agreement," Text of the La Paz Agreement, including Annex I-V. http://yosemite.epa.gov/oia/MexUSA.nsf/La+Paz+Agreement+-+Web?OpenView&ExpandView, August 14, 1983.

[15] U.S. Bureau of the Census, *Annual Estimates of the Population for Counties of Arizona: April 1, 2000 to July 1, 2004 (CO-EST2004-01-04)* (Washington D.C.: the Population Division, U.S. Census Bureau, 2005), and El Instituto Nacional de Estadísticas, Geográfica e Informática (the Mexican Bureau of Statistics, Geography and Computer Science), *Estadísticas de Población por Estado (Population Statistics by State),* 2000.

[16] General Consulate of Mexico, "Economic Impact of the Mexico-Arizona Relationship" (Phoenix, AZ: Thunderbird Mexican Association, Academic Research Project, May 2003), 1.

[17] *National Strategy for Homeland Security*, 60.

international boundary, recognizing that natural or man-made disasters do not distinguish between geopolitical boundaries. Thus, the terms "homeland security" and "border security" are used interchangeably throughout this thesis in reference to securing the ASB region.

B. WHO'S IN CHARGE?

Pre-9/11 immigration services and enforcement were within the organizational structure of the U.S. Department of Justice as the Immigration and Naturalization Services (INS). The USBP, a unit within the INS enforced illegal immigration between the POEs. The National Homeland Security Strategy restates the law that all entry and exit to the U.S. must be conducted through a designated POE with the appropriate documentation.[18] However, tighter immigration laws, singularly focused enforcement efforts, and greater restrictions on the legal entry foreign nationals cause many border crossers (i.e., laborers, human smugglers, drug smugglers, and potential security violators) to enter the U.S. illegally through international borders.

9/11 brought a new dimension to the problem of illegal immigration with potential terrorists seeking to enter the country, thereby elevating border security to a national priority. The U.S. government responded to 9/11 with the creation of the DHS, a department tasked with "preventing the U.S. from a terrorist attack, reducing American's vulnerability to terrorism and minimizing the damage and recovery from attacks that do occur."[19] DHS was created under the Homeland Security Act of 2002 and merged twenty-two agencies into one department and one mission. One of the newly created directorates was Border and Transportation Security, which abolished the INS and divided its functions among CIS, ICE, US Coast Guard and CBP. While these units continue to exist with the DHS, the directorate of Border and Transportation Security was recently disbanded by Secretary Chertoff in July 2005. Now, CIS processes legal immigration services and enforces illegal immigration as well as the US Coast Guard, ICE, and CBP. The duties of illegal immigration enforcement are further divided between ICE and CBP: ICE enforces immigration law within the interior of the U.S. and

[18] *National Strategy for Homeland Security*, 21.

[19] Ibid, vii.

CBP, USBP enforces and protects the U.S. border. The goal in integrating customs inspectors, immigration inspectors and agricultural inspectors under CBP was to provide one face at the border and one comprehensive strategy with a unity of force. However, USBP although a unit of CBP, remains distinct, with its own mission and force.

Under the auspices of a new directorate, the priority mission of the USBP is homeland security, defined as "nothing less than preventing terrorists and terrorist weapons – including potential weapons of mass destruction – from entering the United States."[20] The priority mission functionally establishes and maintains operational control of the U.S. border between the ports of entry. On the other hand, it is CBP's mission to control the U.S. border as a whole. 9/11 expanded the traditional mission to the prevention of terrorist and terrorist weapons from entering the U.S. in addition to "interdicting illegal aliens and drugs and those who attempt to smuggle them across our borders."[21] The USBP's area of operation and responsibility is between land and sea POEs, which extends across 7,000 miles of border with Canada and Mexico and 2,000 miles of coastal borders. By law and the National Border Patrol Strategy, CBP is the authoritative law enforcement agency charged to protect the nation's borders and ensure that the U.S. is not penetrated by terrorists, unauthorized migrants, human smugglers, human traffickers, drug smugglers and contraband.[22]

C. USBP ORGANIZATIONAL OVERVIEW

When the DHS reorganized USBP, it divided the U.S. into 21 sectors of operation for practical managerial reasons, as shown in Figure 1.

---

[20] Robert C. Bonner, "National Border Patrol Strategy: Message from the Commissioner" (Washington D.C.: U.S. Customs and Border Protection, Office of Border Patrol and the Office of Policy and Planning, September 2004).

[21] Ibid.

[22] Labor Appropriation Act 1924 established the U.S. Border Patrol in response to rising illegal entries particularly along land borders.

Figure 1. Map of the U.S. Border Patrol Sectors

(From: *Honor First*, unofficial U.S. Border Patrol website created by U.S. Border Patrol Agents, http://www.honorfirst.com/stationlist.htm [accessed August 15, 2005]).

While the USBP patrols both the Northern and Southern border, ninety percent of USBP resources are deployed along the USMB because it is considered the focal point for illegal immigration with ninety-seven percent of all illegal alien apprehensions.[23] The four border states along the USMB are divided into nine USBP Sectors: San Diego and El Centro, California; Yuma and Tucson, Arizona; El Paso (New Mexico and two counties in Texas); Marfa, Del Rio, Laredo and McAllen, Texas. While these four states share a geopolitical and geo-physical border with Mexico, they do not share the same topography, climate or challenges. The USBP faces the challenge of developing different operational tactics and techniques for each sector.

Tucson Sector represents forty-three percent of the total annual Southwest USBP's apprehensions.[24] This percentage indicates that most of the illegal cross-border activity occurs within 262 miles of the total 2,000 miles of international border with Mexico.[25] Table 1 indicates that in the past decade the Tucson Sector has become the

[23] Lisa Seghetti and others, "Border Security and the Southwest Border: Background, Legislation, and Issues," *Congressional Research Service* (September 28, 2005): 21.

[24] U.S. Border Patrol. "Apprehension Statistics 1993 -2004: Data Presented in Actual Numbers and as a Percentage of Total Southwest Apprehensions," http://www.lawg.org/docs/apprehension%20stats.pdf (accessed June 20, 2005).

[25] The illegal cross-border activity accounted for is the activity that is observed and interdicted.

most active in terms of illegal cross-border activity with a significant increase from eight percent of the total apprehensions along the Southwest border in 1993 to forty-three percent in 2004.

U.S. Border Patrol
Apprehension Statistics 1993 - 2004
Data Presented in Actual Numbers and
as a Percentage of Total Southwest Apprehensions

Border Patrol Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total Southwest	1,212,886	979,101	1,271,390	1,507,020	1,368,707	1,516,680	1,537,000	1,643,679	1,235,717	929,809	905,065	1,138,282
San Diego, CA	531,689	450,152	524,231	483,815	283,889	248,092	182,267	151,681	110,075	100,681	111,515	138,608
El Centro, CA	30,058	27,654	37,317	66,873	146,210	226,695	225,279	238,126	172,852	108,273	92,099	74,467
Yuma, AZ	23,548	21,211	20,894	28,310	30,177	76,195	93,388	108,747	78,385	42,654	56,638	98,060
Tucson, AZ	92,639	139,473	227,529	305,348	272,397	387,406	470,449	616,346	449,675	333,648	347,263	490,771
El Paso, TX	285,781	79,688	110,971	145,929	124,376	125,035	110,857	115,696	112,857	94,154	88,816	104,399
Marfa, TX	15,486	13,494	11,552	13,214	12,692	14,509	14,952	13,689	12,087	11,392	10,319	10,530
Del Rio, TX	42,289	50,036	76,490	121,137	113,280	131,058	156,653	157,178	104,875	66,985	50,145	53,794
Laredo, TX	82,348	73,142	93,305	131,841	141,893	103,433	114,004	108,973	87,068	82,095	70,521	74,706
McAllen, TX	109,048	124,251	169,101	210,553	243,793	204,257	169,151	133,243	107,843	89,927	77,749	92,947

Border Patrol Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
San Diego, CA	44%	46%	41%	32%	21%	16%	12%	9%	9%	11%	12%	12%
El Centro, CA	2%	3%	3%	4%	11%	15%	15%	14%	14%	12%	10%	7%
Yuma, AZ	2%	2%	2%	2%	2%	5%	6%	7%	6%	5%	6%	9%
Tucson, AZ	8%	14%	18%	20%	20%	26%	31%	37%	36%	36%	38%	43%
El Paso, TX	24%	8%	9%	10%	9%	8%	7%	7%	9%	10%	10%	9%
Marfa, TX	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Del Rio, TX	3%	5%	6%	8%	8%	9%	10%	10%	8%	7%	6%	5%
Laredo, TX	7%	7%	7%	9%	10%	7%	7%	7%	7%	9%	8%	7%
McAllen, TX	9%	13%	13%	14%	18%	13%	11%	8%	9%	10%	9%	8%

Table 1. U.S. Border Patrol Apprehension Statistics 1993 – 2004.

(From: U.S. Border Patrol, "Apprehension Statistics 1993 -2004: Data Presented in Actual Numbers and as a Percentage of Total Southwest Apprehensions," http://www.lawg.org/docs/apprehension%20stats.pdf [accessed June 20, 2005]).

According to the INS, this phenomenon is a tactical dimension of the INS' National Strategic Plan, which accounts for various ways to control the influx of illegal immigration in the concentrated border areas of San Diego and El Paso. The INS focused enforcement efforts in San Diego and El Paso; the intention was to shift migrants outside of the urban area, thereby shifting the migrants to more open areas, a strategic and tactical intention of INS. The intention was not to shift migrants into different

jurisdictions. The intent of this strategy was to continue shifting the migrants and breaking up criminal networks by gaining control in the less secure areas overtime. As indicated by the USBP Chief David Aguilar, "[h]istorically, major CBP Border Patrol initiatives, such as Operation Hold the Line, Operation Gatekeeper, and Operation Rio Grande in our El Paso, San Diego, and McAllen Sectors, respectively, have had great border enforcement impact on illegal migration patterns along the southwest border, proving that a measure of control is possible. Together, they have laid the foundation for newer strategies and enforcement objectives and an ambitious goal to gain control of our Nation's borders, particularly our border with Mexico."[26]

Border security experts argue that the border security strategy is at a stage where the migration flow is concentrated in Arizona. However, this concentration can be due to changes in leadership, administrations and a non-continuous flow of resources to these less secure areas, leaving the Tucson Sector as the primary gateway for illegal cross-border activity along the USMB. The various border operations mentioned in Chief Aguilar's testimony are part of the first phases of the overall national border security strategy developed in the early 1990s. DHS is developing and implementing new strategies, such as the Arizona Border Control Initiative to continue the border security strategy's second phase in minimizing the vulnerabilities along the international border.

D. CONTEMPORARY BORDER SECURITY OVERVIEW (1993-2004)

The review of USBP's contemporary strategy from 1993 to 2004 will help illuminate how these particular USBP strategies led to the current challenges faced by the Arizona Tucson Sector. The build-up of border enforcement along the USMB first started in the early 1990s under the Clinton Administration in response to public concern about illegal immigration from Mexico and its effect on public services and employment in the United States.[27] Experts called for a strategy that would simultaneously increase tighter enforcement of U.S. immigration laws while NAFTA spurred Mexican economic

[26] David Aguilar, U.S. Border Patrol Chief, testimony before the House Committee on Appropriations and Subcommittee on Homeland Security, July 12, 2005.

[27] Wayne Cornelius, "Controlling 'Unwanted' Immigration: Lessons from the United States, 1993 – 2004" (San Diego, CA: University of California Center for Comparative Immigration Studies, December 2004), 2.

growth. Together, both would help reduce the flow of illegal immigration from Mexico to the U.S. Consequently, INS designed several border security strategies to prevent illegal cross-border activity. These strategies derived from a mixture of community policing theory and a low-intensity warfare concept. The challenges along the border were concentrated and the need to protect the international border from illegal entry caused border security experts to research and implement new theories. Border security strategies focused on deterrence by deploying large numbers of border patrol agents, increasing the hours of actual border patrolling, and enhancing border security technology. These resources were deployed to strategically designated areas of the Southwest border with the greatest number of crime and disorder. During this period, the San Diego and El Paso sector represented the gateways used by 70-80 percent of the unauthorized migrants entering the U.S.[28] The strategy made sense and the demand for federal response resulted in the implementation of this strategy with the greatest border security funding appropriation in U.S. history.

Rather than spread the resources across the entire USMB, the INS "concentrated border enforcement strategies" were implemented in four specific segments of the international border: Operation Hold-the-Line in El Paso, Texas in 1993, Operation Gatekeeper in San Diego in 1994, Operation Rio Grande for South Texas in 1997, and Operation Safeguard in central Arizona in 1995.[29] These strategies were developed with the intention of increasing the USBP's probability of apprehension to a level that would deter potential migrants from crossing into El Paso or San Diego. Eventually, the intent was for border crossers to "spread the word" on the difficulty of entering the U.S. without being apprehended to potential migrants and deter them from leaving their hometowns in Mexico and other countries.

Operation Safeguard began operations in 1999 in Nogales, Arizona. It was not until 1999 when USBP in Arizona began to participate in the concentrated border enforcement strategy. Some experts argue that this was because Arizona contains extensive natural hazards, which were perceived as a deterrent to migrants attempting a clandestine entry into the U.S. As stated in Wayne Cornelius' article, former INS

[28] Cornelius, "Controlling 'Unwanted' Immigration," 6.

[29] The majority of resources for Operation Safeguard did not arrive until 1999.

Commissioner Doris Meissner believed no one would risk their lives to illegally cross the border in areas of formidable mountains and extreme desert temperatures.[30] Essentially, "Mother Nature" would take care of USBP's responsibility. However, experts were incorrect about their assumption as seen by the significant loss of life by many migrants attempting to cross in these geographically desolate areas.[31]

Roughly ten years after the implementation of the INS Strategic Plan, border security still remains a critical national mission. Throughout this entire period, the U.S. has increased funding into immigration control and border security initiatives, however still deem inadequate to meet the new mission post-9/11. Our nation is still facing a steady increase in the number of illegal immigrants residing in our communities with an increase in the number of deaths in the desert; both demonstrate that the current border enforcement system is flawed.[32] According to the Search for International Terrorist Entities (SITE) Institute, the border enforcement policy was unsuccessful because "despite extensive surveillance, the border remains porous because of the stretches of desert it crosses and Mexico's established smuggling networks."[33] However, this premise was a component of INS' National Strategic Plan, yet the border remains insecure. What did INS fail to do in the Tucson Sector to secure our borders?

In order to determine INS' shortfalls with regards to the USBP Tucson Sector, it is important to provide a historical overview of the INS' Strategic Plan. Between 1993 and 1994, the USBP developed the National Border Patrol Strategy to establish control and enforce border security along the USMB. This strategy was multi-phase, focusing first in the El Paso and San Diego Sectors. The strategy's main focus was to prevent unauthorized migrants from entering the U.S. through deterrence mechanisms. These mechanisms utilized a mixture of resources, which included: technology, extension of

---

[30] Cornelius, "Controlling 'Unwanted' Immigration," 6.

[31] Bill Vann, "Five Years of Operation Gatekeeper: US Border Crackdown Deaths Souring," *International Committee of the Fourth International (ICFI),* June 25, 1999, http://www.wsws.org/articles/1999/jun1999/ins-j25.shtml (accessed February 26, 2005).

[32] Jeffrey Passel, "Unauthorized Migrants: Numbers and Characteristics," *Pew Hispanic Center*, June 14, 2005.

[33] Richard B. Schmitt and others, "U.S. Fears Terrorism Via Mexico's Time-Tested Smuggling Routes," SITE *Institute*, September 15, 2004, http://www.siteinstitute.org/bin/articles.cgi?ID=news18904&Category=news&Subcategory=0 (accessed December 6, 2004).

fencing, and a significant increase of manpower to the El Paso and San Diego urban area.[34] Efforts commenced with a significant increase of USBP officers presence on the border, followed by the creation of a new and improved ten-foot-high steel fence in San Diego. This improved fencing made it more difficult for migrants to tamper with the fence and inhibit migrants from illegally entering the U.S.[35] Much like before the implementation of the concentrated border security strategy, migrants and smugglers continued to climb the fence, tamper with the fence by cutting wholes in it or dig tunnels under it, but most of it lead to quick apprehension by USBP, causing smugglers and migrants to move from well-lit urban areas to more desolated areas to continue their travels north.[36]

As migrants and smugglers probed the weak areas, the USBP responded by closing known tunnels and making it more difficult to climb over the fence by erecting vertical extensions angled back into Mexico to create a greater obstacle for migrants to climb the fence. Ten years later, in San Diego, this fence was tripled to create a greater obstacle for migrants and smugglers, shifting migrants further east. Meanwhile, state-of-the-art remote video surveillance systems connected to motion detectors and seismic radars, added by stadium-type lighting were installed along the international fence. Additionally, the majority of a USBP agent's time was consumed with "line-watch" duty. Many agents were strategically stationed parallel to the international border to prevent entry in this area. Another technological advancement of this strategy was the Automated Biometric Identification System (IDENT), a database that stores the biometric photograph and fingerprints identifying all entered apprehended migrants. This database has assisted the USBP with identification and prosecution human smugglers and migrants, who are frequent crossers. This technology was later implemented along the entire Southwest border.

While these border security efforts had a significant impact in the San Diego and El Paso Sector, less secure sectors are suffering from the incomplete multi-phase

[34] Some fencing was already in place prior to the implementation of the National Security Plan, however, this plan increased fencing in many areas along the USMB.

[35] Operation Gatekeeper for the San Diego Sector extended the fence into the Pacific Ocean, preventing unauthorized migrants from attempting to swim across into the San Diego coastal area.

[36] Cornelius, "Controlling 'Unwanted' Immigration," 7.

implementation of the National Border Strategy. The ASB current border insecurity situation is due to the incomplete implementation of the National Border Strategy Phase II, long over-due and insufficient resources continue to arrive to the Tucson Sector. As noted above in Table 1, while the San Diego and El Paso sectors continued to establish and maintain border security, over time the local apprehension rate began to decrease and apprehensions began to increase in less secure border areas, such as the Tucson Sector. This measure of impact is important because it was a direct result of the dismantling of organized smuggling networks. The displacement of migrants into less secure sectors is a USBP-accepted measure of impact of border control efforts in the San Diego and El Paso Sector.[37] However, the Tucson Sector apprehension rate continues to increase regardless of the supplemental border security resources to the Tucson Sector. Drawing from lessons learned in the San Diego and El Paso sectors, one can deduce that the apprehension rates continue to remain high in the Tucson Sector regardless of the increase of border security resources because organized smuggling networks continue to be strong in this area.

E. USBP TUCSON SECTOR CURRENT BORDER SECURITY STRATEGIES

This section provides an overview of the current border security policies and operational structure in the Arizona Tucson Sector. This overview will provide background information as to how the Tucson Sector is attempting to secure the border with little success based on USBP's own measures of impact and effectiveness used in the San Diego and El Paso Sectors.

1. Arizona Border Control Initiative

With a rise in illegal cross-border activity, Arizona is challenged with rising crime rates, environmental concerns from discarded debris, and a diminished quality of life in the border region. In response, DHS Secretary Tom Ridge rolled out the Arizona Border Control Initiative (ABCI) in 2004.[38] This initiative established four phases to increase

[37] U.S. General Accounting Office, "Border Control: Revised Strategy is Showing Positive Results," Washington D.C., December 1994.

[38] Governor Janet Napolitano, "The National Spotlight is on the Arizona Border," *Phoenix News*, November 30, 2005, http://www.phxnews.com/fullstory.php?article=28861 (accessed December 18, 2005).

border enforcement resources, including the addition of border patrol agents to the Tucson Sector. This initiative seeks to accomplish a reduction in the flow of illegal migrants while improving the quality of life in the border region. While little discussion on extending the actual border fence between Arizona and Sonora, the ABCI requires a review and implementation of new technology.

Phase I of the ABCI initiative increases border security resources with the addition of 200 border patrol agents in the Tucson Sector and four air support units. Further, Phase I strengthens partnerships with Mexico with the establishment of an internal repatriation program and interior enforcement efforts. A detailed description of the new programs, internal repatriation and UAVs, is provided below.

Internal Repatriation: The internal repatriation program with Mexico is an effort to decrease the flow of immigration by reducing the recidivism rate and death tolls along the Arizona-Sonora desert. In addition to the internal repatriation program, the U.S. government returned apprehended Mexican migrants to Mexico through the nearest Mexican POE. This process is known as the voluntary return, and is not considered a formal deportation process given that the migrant does not go before an immigration judge and was not formally deported. This is a swift and voluntary process that alleviates the judicial system of an exorbitant volume of immigration cases. However, the voluntary return process allows migrants to attempt re-entry into the U.S. within hours of their return to Mexico because of their proximity to the international boundary, creating a "revolving immigration door." The internal repatriation program is intended to stop this cycle of re-entry into the U.S.

Under the internal repatriation program, apprehended migrants voluntarily opt to be returned to Mexico City or Guadalajara, Mexico. The USBP states that this program facilitates the return of migrants to their families and provides an option for those migrants who regret traveling to the U.S.[39] These migrants undergo an interview process with the Mexican Consulate to ensure that their rights are protected. Then, the migrants are flown back to Mexico City or Guadalajara. The USBP declared the repatriation program a success in their efforts to establish control of the border because the program

[39] Lou Maheda, U.S. Border Patrol Agent, Presentation on Nogales Border Patrol Station Operations in Nogales, AZ, June 6, 2005.

saved lives in the desert and interrupted the "revolving door" of apprehensions.[40] Nevertheless, interior repatriation is not a new program with Mexico; in fact, for the past three decades the U.S. has tried interior repatriation with minimal results.[41] If the end-goal is to stop the flow of migrants crossing the USMB, internal repatriation is not the answer, given the experience with previous repatriation programs. CBP recognizes that the internal repatriation program "will not solve the long-term socio-economic issues that influence immigration policy."[42] This then begs the question, why is the U.S. government spending $13 million in "band aid fixes" (internal repatriation) when these funds could be used to increase border security resources?[43]

UAVs: The U.S. Department of Defense (DOD) for decades pioneered using drones during various operations. Fort Huachuca, Arizona conducts different UAV tests and trains soldiers on how to man them. Previous to the implementation of the ABCI, DOD and USBP entered into a partnership, which allows USBP to take advantage of the UAV testing to spot illegal cross-border activity and deploy USBP resources accordingly. From this partnership, USBP learned of UAVs capabilities and made the policy decision to conduct a UAV pilot program in the Tucson Sector.[44]

In an interview with C-SPAN, DHS Undersecretary Asa Hutchinson claimed that while physical fences along the border add a protective level, there is a need to man the fence. As a consequence, fencing alone is not the answer to stop illegal cross-border activity. Hence, using new technologies such as UAVs can be much more effective than an actual physical barrier.[45] The Congressional Research Service Report states that "the use of UAVs on the Northern and Southern borders could potentially act as important force multipliers by covering previously unpatrolled areas or more effectively surveilling

---

[40] Lou Maheda, (U.S. Border Patrol Agent), Presentation on Nogales Border Patrol Station Operations in Nogales, AZ, June 6, 2005.

[41] Former USBP Agent in discussion with the author, Phoenix, AZ, February 23, 2006.

[42] Customs and Border Protection, "Repatriation: No Easy Answers," *Customs and Border Protection Today*, July-August 2004, http://www.cbp.gov/xp/CustomsToday/2004/Aug/repatriation.xml (accessed January 28, 2006).

[43] Ibid.

[44] Colonel Matthew Walsh (Fort Huachuca, Arizona) in discussion with the author, June 2004.

[45] Undersecretary Asa Hutchinson, U.S. Department of Homeland Security, in an interview with C-SPAN, *WA Journal,* February 21, 2005.

areas already patrolled."[46] Under the ABCI, UAVs were introduced as a pilot program to the Tucson Sector. With well over 1,000 apprehensions in just six months of operations, the pilot program was deemed a success by both the USBP and the U.S. General Accounting Office.[47] Now, the USBP notes that UAVs serve as a security asset for agents by providing an advance picture of what type of scenario or incident agents may encounter.[48] Dispatchers also are able to deploy resources efficiently based on this remote situation reconnaissance. However, in a recent visit to Fort Huachuca, Arizona the authored learned that the USBP is no longer under-taking operations at this location. Understanding that the closest USBP station is one-hour away from Fort Huachuca and the distance to travel alone is an inefficient use of the USBP agent's time.

In March 2005, DHS Secretary Chertoff expanded to Phase II of the ABCI. This expansion assigned an additional 500 agents to the Tucson Sector. In an interview with C-SPAN, the USBP Tucson Sector Chief Patrol Agent, Michael Nicley, indicated that the additional 500 agents meet the requisite number of border patrol agents necessary to secure the border in the Tucson Sector.[49] The message DHS hoped to send migrants with the increased security initiative is that the international boundary must be respected and migrants must not attempt illegal entry. According to a U.S. State Department report regarding Southern Border Initiatives, USBP Chief, David Aguilar, told senators that the ABCI "had a significantly positive impact in the area known for illicit smuggling of persons and drugs."[50]

However, unlike the enforcement efforts in the San Diego and El Paso Sectors, the ABCI initiative has not seen a decrease in migrant apprehensions. Rather, the Tucson

---

[46] Christopher Bolkcom, "Homeland Security: Unmanned Aerial Vehicles and Border Surveillance," CRS Report (Washington D.C., Congressional Research Service, February 7, 2005), 6.

[47] Lisa Reed, U.S. Border Patrol Agent, telephone conversation with the author on UAVs, February 23, 2005.

[48] Ibid.

[49] Michael Nicley, U.S. Border Patrol Tucson Sector, Chief Patrol Agent, in an interview with C-SPAN, *WA Journal,* May 16, 2005.

[50] U.S. State Department, "Border Official Points to Successful Southern Border Initiatives: Senate Committee Look at Ways to Improve Border Security, Stop Terrorists," June 7, 2005, http://usinfo.state.gov/gi/Archive/2005/Jun/08-215133.html (accessed January 19, 2006).

Sector continues to show an increase in apprehensions despite the increased border security resources. Given this situation and the limited resources, USBP launched a supplementing initiative called Operation Stonegarden.

2. Operation Stonegarden

Operation Stonegarden was an initiative launched by former DHS Secretary Tom Ridge to increase state, tribal and local law enforcement participation in border security efforts. Through the State Homeland Security Grant Program, DHS authorized payment to state, tribal and local law enforcement agencies of back-fill and over-time for assisting USBP to assist in border security operations. In place from October 2004 until January 2005, DHS Secretary Michael Chertoff considered this operation a success because non-federal law enforcement agencies became a force multiplier within the border region by supporting border security efforts in the Tucson Sector.[51] This operation helped close the gap in the number of requisite enforcement agents by increasing the personnel on the ground. Many of these agents patrolled the highways, urban areas and illegal cross-border activity corridors. The over-time and back-fill of law enforcement officers is a financial burden on local communities. Non-federal law enforcement agencies are willing to assist USBP but can only continue support patrol activities as long as funding resources are provided.[52]

The measures of impact and effectiveness used by the USBP in the San Diego and El Paso Sectors are a decrease in local apprehensions and a displacement of migrants to another area along the border. ABCI and Operation Stonegarden are two initiatives designed to establish and maintain border control. Despite these steps, however, the Tucson Sector continues to be the main gateway for illegal cross-border activity along the Southwest border. Why then is USBP claiming a success in the Tucson Sector? If the parameters used to determine success in San Diego and El Paso are accurate, then the USBP has seemingly failed in its control efforts in the Tucson Sector. However, after the first six months of the ABCI implementation, former DHS Undersecretary Asa Hutchinson stated, “"[Border and Transportation Security] initiatives are impairing the

[51] Michael Chertoff, U.S. Department of Homeland Security, Secretary, *DHS Expands Operation Stonegarden to Bolster Border Security Efforts*, Press Release, January 6, 2006, http://www.dhs.gov/dhspublic/display?content=5332 (accessed January 6, 2006).

[52] Chief John Kissinger (Nogales Police Department), in discussion with the author, October 2005.

ability of smuggling organizations to operate, saving many lives and restoring control to the Arizona border."[53] Border control has not been achieved along the Arizona border; therefore, USBP should not claim a success in the Tucson Sector.

F. THE SOCIAL DIMENSION

Despite the best strategic efforts of the USBP, not all people, goods, and services enter the U.S. legally through a designated POE. Illegal border crossers continue to enter the U.S. in between POEs, exposing the weak areas of our current border security system. As such, from a socio-political standpoint, there is a dire need to create a border security system to prevent such activity from occurring. Although the USBP philosophy of 'prevention through deterrence' seems appropriate in theory, in effect it has proven to be of limited success. Thus, it is helpful to examine the challenges confronting the USBP, and the Tucson Sector in particular, by providing the situational awareness of the various humanitarian and social concerns that occur in the Sonora region.

1. Non-US Governmental Actors; Faith-based Community Efforts

Many non-profit and faith-based organizations are attempting to address a myriad of humanitarian concerns in the border region by providing shelter, water, clothing, medical services and meals. In order to understand this dimension of border security efforts and the real hardships migrants face as they continue their journey, the author made a visit to the City of Altar, Sonora, a known staging area for illegal entry to the U.S. and where the Catholic Dioceses provides humanitarian relief to migrants. The following section describes an interview conducted with Father Rene Castañeda of Sonora.[54]

Father Castañeda is a young and energetic Diocesan priest assigned by his Archbishop to oversee the plight of migrants in Altar, Sonora. When he arrived at the Altar Dioceses in 2001, he found his *paisanos* (fellow countrymen) loitering at the Municipal Plaza around the local church as they rested while waiting for their "coyote" (human smuggler) to guide them to the international border. In Altar, he found these

[53] Asa Hutchinson, U.S. DHS, Border and Transportation Security Undersecretary, "At Six Months, Arizona Border Control Initiative Marks Successes: DHS To Extend Multi-Agency Program Into Fall," *Inside ICE* I, Issue 12, September 27, 2004, http://www.ice.gov/graphics/news/insideice/articles/insideice_092704_Web6.htm (accessed December 6, 2004).

[54] Father Rene Castañeda (diocesan priest, Altar, Sonora), in discussion with the author, June 2004.

migrants grossly mistreated. Migrants were sleeping outside walls of the church and mothers with their children suffered assaults from other migrants and bandits. In addition, the local Altar residents discriminated against the migrants, calling them "Oaxacas," a demeaning name for people from the south of Mexico. Father Castañeda began his charitable efforts by providing food every Sunday to groups of 200 migrants gathered at the church. Father Castañeda has now dedicated his life to providing assistance for these less fortunate people.

Father Castañeda confronts many obstacles in the local Altar community. With a population of 9,000, the town of Altar suffers from a lack of water due to the high influx of daily migrants, between 3,000 and 4,000 each day. Additionally, Father Castañeda faces opposition from the local community who believe that the Archbishop sent him only to help the "lowly Oaxacas." Meanwhile, an increase in the migrants' demand for services, such as guesthouses and kiosks with backpacks, food, and water, has changed the local economy, which historically relied mainly on agriculture and cattle. These changes have lead to the sustained growth of illegal human trafficking.

The community also encounters serious problems with the Coyotes and their opportunist scams. For example, as the migrants call their family from a local telephone booth, a Coyote will stand nearby, jot down the phone number, and request funds from the migrant's family. The migrant's family, believing that their relatives are already in the U.S., will then wire the funds to a local Western Union or similar courier services in Altar where the Coyote subsequently steals the funds. Another pervasive problem in Altar is a crime known as "La Trata." Deceived into thinking that they are being recruited to work in the U.S. as fashion models, women and young girls are signed away by their families and forced into prostitution when they enter the U.S.

In order to keep migrants safe from these despicable conditions, Father Castañeda has developed a sanctuary that provides migrants with food, sleep quarters, clothing, medicine, spiritual guidance and other basic necessities. With the assistance of those few in the Altar community that support his efforts, Father Castañeda has built a center called Community Service Center for the Migrant and Needy (CCAMYN - Centro Comunitario de Atención al Migrante y Necesitado), an amicable place that does not reject or discriminate. Once there, he requires that migrants take a shower prior to going to bed

and provides them with clothing if necessary. Since the migrants who go to the Center tend to be extremely poor, this is often their first lifetime exposure to a shower and bathroom facilities. Also, the Center functions to raise the awareness level about human rights through scripture readings, not only for the migrants, but also for the community at large. Although the average daily occupancy is about 20, the Center has the capacity to hold up to 30 people. The allowable period of stay is three days, with a provision for extending the time up to 15 days.

Since the Center opened in 2001, it has helped over 14,285 migrants. When a migrant seeks assistance they must go through an interview process and receive a lecture on the value of hard work. Consequently, 50% of the Center's fees are paid by the Mexican Grupo Beta and the other 50% is charged to the migrant. To pay the fee, each migrant must leave the Center at 7 AM everyday to seek employment in the nearby fields. In order for migrants to stay at the Center, they must demonstrate that they have found work within that three-day period. The Center investigates to ensure they are working and if they are respectful they will be granted an extension. Yet the conditions are so dire that even after the education sessions, 80% of people who arrive at the Center travel north to cross the border, 20% return as deportees, of which 5% return to their place of origin. Since migrants from the south of Mexico continuously receive subsidy grants from the Mexican government, Father Castañeda is well aware of their tendency toward dependence and a resulting sense of laziness. His center does not tolerate that behavior and if it persists the migrant will be asked to leave.

2. Migrants Head North

In 1999, Mexican Grupo Beta claimed an average of 300 migrants a day travel through Altar. Today, an average of 1,500 migrants a day travel through the Tortuguita checkpoint,[55] many of them children with an average age of between 16 and 18 years old.[56] Mexican Grupo Beta indicated that there are several staging areas that provide access to the international border, but Altar is known as the primary access point for Central Americans and Mexicans. Other staging areas along the ASB include: Nogales,

[55] The Mexican Grupo Beta mans the Tortugita checkpoint, which is located between Altar and Sasabe, a place where Grupo Beta speaks to the migrants about the dangers of crossing the border illegally. Additionally at the checkpoint, Mexican Grupo Beta counts the number of migrants passing through.

[56] Mexican Grupo Beta Official, Tortuguita check-point in Sonora, Mexico, in discussion with the author, June 6, 2005.

Naco and Agua Prieta, as will be explained in greater detail in Chapter IV. These staging areas define the decision points for migrants to cross the international border. Interestingly, Coyotes have color-coded the illegal routes and gather the migrants according to the colored route for their travel north to the U.S.

Altar is about 90 kilometers south of the border. Migrants are transported by van to "La Ladrillera" (a brick yard) about 10 kilometers south of Sasabe, a border town. On the way to La Ladrillera, the Mexican Grupo Beta provides and offers assistance to migrants at a checkpoint about an hour away from Altar, called "La Tortugita" (The Little Turtle). At this checkpoint, Mexican Grupo Beta keeps track of the number of migrants traveling north, provides a natural hazard awareness session and offers assistance to the migrants.

This is the final staging point until migrants are gathered and transported through the desert along a cattle trucks route that parallels the international border. The final destinations are either the San Miguel gate (POE on the Tohono O'odham Nation), or Pozos Verdes, two locations adjacent to the international fence. From the Ladrillera to either final destination point the terrain is rugged and needs heavy-duty vehicles such as cattle trucks to provide access. The migrants are loaded on to cattle trucks. This change in vehicles occurs because the vans have a transportion-operating permit between Altar and Sasabe and if they detour from the permitted route, they risk losing the operating permit. It costs migrants 100 pesos ($10 USD) to be transported from Altar to Ladrillera and an additional 60 pesos ($6 USD) from the La Ladrillera to San Miguel gate.

During their stay in Altar, Father Castañeda tries to educate the migrants about the potential dangers faced when crossing the border and putting their lives into the hands of the Coyote. He educates migrants about the dangers of the desert by providing awareness of possible death due to extreme weather and terrain conditions. Additionally, Father Castañeda informs migrants about how Coyotes provide migrants with an illegal drug called "speed" to decrease a migrants resting time. Many migrants are not aware that the drug provided by their smuggler is illegal and can potentially kill them because of a lack

of nutrition and overdose. Many migrants cannot afford a Coyote and opt to walk the Altar desert in their efforts to travel north, which causes many to die in Sonora or in close proximity of the international border, as highlighted in Figure 2.

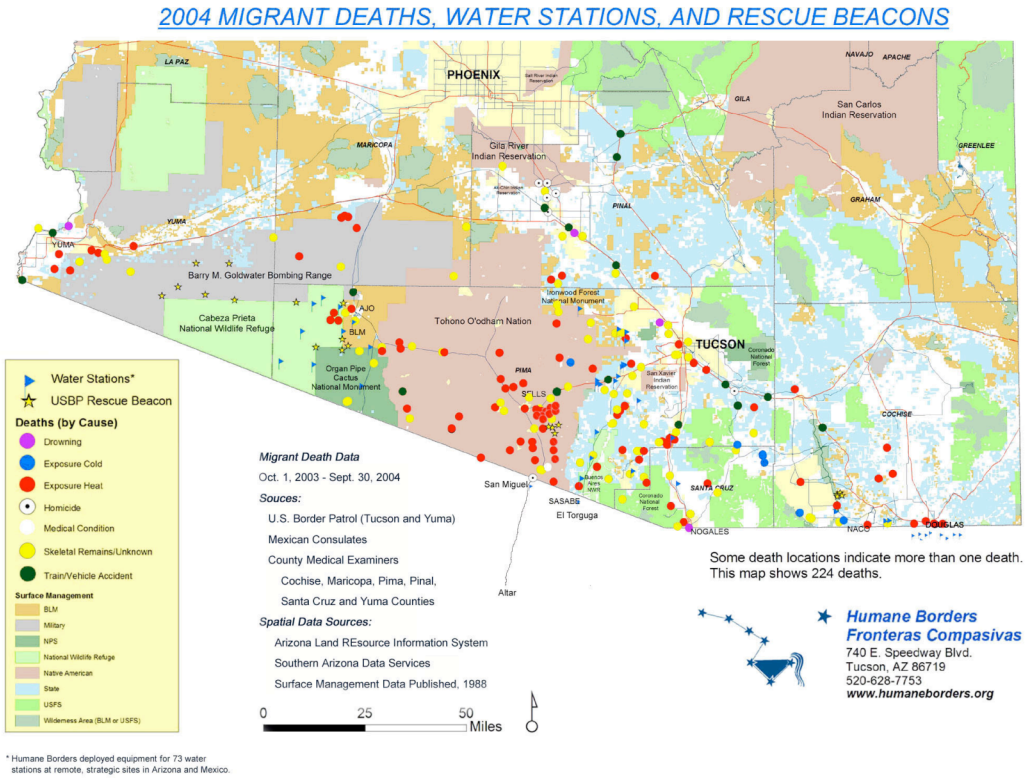

Figure 2. 2004 Migrant Deaths, Water Stations, and Rescue Beacons

(From: Humane Borders, "2004 Migrant Deaths, Water Stations, and Rescue Beacons," http://www.humaneborders.org [accessed June 2005]).

Father Castañeda realizes that providing these services for up to 30 migrants a day is insufficient to truly combat the problem of migration. Yet, his services are the bare necessities essential in providing assistance to those who need it most. Father Castañeda continues to promote human dignity for the migrants, the settlers, and those left to die on their travels. He knows that every migrant comes primarily to look for work, something

to eat, and a place to protect their family. He strongly believes that illegal immigration will not end until the root causes are dealt with collectively, specifically the economic reasons that cause migrants to head north.

The interdependencies along the border supplemented with the socio-economic issues requires a border security system that not only enforces the U.S. immigration law, but also focuses on the humanitarian aspects and the need to increase economic prosperity especially in high-sending regions. Additionally, border security systems need to be flexible to adapt to new emerging threats, the next chapter will focus on the increasing threats along the international border and illegal smugglers' counter-reactions to border security efforts.

THIS PAGE INTENTIONALLY LEFT BLANK

III. BORDER SECURITY OR INSECURITY?

A. IMPLICATIONS OF INCREASING BORDER SECURITY RESOURCES TO THE USMB

Two main factors contribute to the ever-increasing demands placed upon border security resources along the USMB. First, the pressure of enhanced law enforcement strategies in certain sectors has resulted in a shift of migrants from more secure urban areas to those rural communities that are less protected and populated.[57] For example, as crime rates dropped in San Diego and El Paso due to more concentrated border security efforts, the Tucson Sector experienced an increase in illegal activity supplemented by violent crimes of auto-theft, extortion, rape, and homicide. Moreover, on a statewide basis, both Arizona and Sonora are currently facing higher crime rates. Arizona ranks first in auto-theft and third in homicide in the U.S., while Sonora ranks third in homicide in Mexico. [58]

Second, Mexico is experiencing an influx of the Islamic migrants with over 120 undocumented Middle Easterners currently residing in Mexico.[59] Conceivably, as the U.S. government increases security measures and tightens immigration law, potential terrorists may seek the assistance of human smugglers to infiltrate the porous international border. If this theory holds true, then the policymakers should ask the same question that Arizona Senator Kyl posed on August 27, 2004, "Why wouldn't those seeking to attack America be tempted to join the hundreds of thousands already illegally entering from Mexico?"[60] In fact, intelligence collected from domestic and international

---

[57] This is one theory in regards to the displacement of migrants along the USMB. An alternative theory is the economic growth rates experienced in Phoenix and Las Vegas. These two cities are experiencing a fast growth rate followed by an increase in construction and employment. This boom in jobs in Nevada and Arizona causes the illegal migrant flow to switch to follow the employment opportunities.

[58] Arizona Criminal Justice Commission, "Arizona Crime Trends: A System Review," Statistical Analysis Center Publication, July 22, 2005, http://azcjc.gov/pubs/home/Crime_Trends_2005.pdf (accessed August 3, 2005). Consejo de Seguridad Publica, "Programa de Mediano Plazo 2004 - 2009: Seguridad Publica," http://www.sonora.gob.mx/biblioteca/documentos/pmp/seguridad.pdf (accessed August 3, 2005)

[59] Centro de Investigaciones Económicas y Política de Acción Comunitaria, "Guerra Mundial: Consecuencias Para México," November 21, 2001, http://www.ciepac.org/bulletins/200-300/bolec267.htm (accessed December 6, 2004).

[60] Senator Jon Kyl, "Arizona: a 'Terrorist Corridor?'," *The Arizona Conservative, Guest Opinion,* August 27, 2004, http://www.azconservative.org/Kyl_TerrorismCorridor.htm (accessed December 6, 2004).

law enforcement communities indicates that terrorists are seeking other means to enter the U.S.[61] As terrorist organizations continue to network in Mexico and exploit the sophisticated organized smuggling rings, the USBP could seemingly be faced with a new paradigm: Coyotes as potential terrorists.

B. THE *BALLOON EFFECT:* COMMUNITY POLICING APPLICABILITY TO BORDER SECURITY EFFORTS

As noted in Chapter II, in the early 1990s, the USBP launched a concentrated border security strategy in the El Paso and San Diego Sectors causing migrants and smugglers to move their operations to less secure sectors along the USMB. The U.S. General Accounting Office Reports suggests that these strategies showed positive results for both sectors. However, the remaining seven sectors along the Southwest border saw an increase in illegal cross-border activity, particularly the Tucson Sector. In 1993, the San Diego Sector represented 43.6% of the Southwest border apprehensions, and the El Paso Sector represented 23.6%.[62] Yet, as the USBP claimed victory in the San Diego and El Paso Sectors with a reduction in apprehensions by 6% and 72%, respectively, the Tucson Sector experienced an increase by 50%.[63] This increase is a clear indication of the *balloon effect* along the USMB – the displacement of illegal cross-border activity to another less secure sector of the international border. This phenomenon was a consequence by the National Strategic Plan demonstrating that the border control efforts in the San Diego and El Paso Sectors were working. However, the migrant flow shift was not intended to stop in the USBP Tucson Sector instead to continuously shift migrants from one sector to another causing disruption of organized smuggling rings; this theory derives from hot spots and community-oriented policing.

Place-oriented crime prevention strategies, also known as community policing, are commonly used by law enforcement agencies throughout the U.S. The theory behind

---

[61] Admiral James Loy, U.S. Department of Homeland Security Deputy Secretary, testimony before the Senate Select Committee on Intelligence, February 16, 2005.

[62] U.S. General Accounting Office, "Border Control: Revised Strategy is Showing Positive Results," Report to the Chairman, Subcommittee on Information, Justice, Transportation and Agriculture, Committee on Government Operations, House of Representatives, Washington D.C., December 1994: 11.

[63] Ibid.

place-oriented crime prevention suggests that crime occurs in clusters, or "hot spots," and is not evenly distributed throughout the U.S. As defined by the U.S. Department of Justice, Office of Justice Programs:

> A hot spot is an area that has a greater than average number of criminal or disorder events, or an area where people have a higher than average risk of victimization. This suggests the existence of cool spots – places or areas with less than average amount of crime or disorder.[64]

This is a phenomenon is used by individuals everyday, evidenced by the places people tending to avoid or frequent given their probability of victimization. This suggests that crime is not evenly distributed. One can deduce that the National Strategic Plan draws from this theory; this is evident because resources were focused in the urban areas. The USBP continues to implement strategies that are complementary to community policing. Experts suggest that this "hot spots" phenomenon is supported by three complementary theories: environmental criminology, routine activities and rational choice. Environmental criminology theory explores and analyzes the environment in which a criminal act is conducted. The analysis takes into consideration the criminal interaction with targets, the opportunities across space and time, and the characteristics of the area, such as safe havens. Routine activities theory is based on the notion that in the absence of a capable guardian, crime occurs when the bandit comes into the close proximity of a potential target. Rational choice is based on the belief that the bandits are capable of making their own decisions and opts to commit a crime in order to benefit.

Another interesting analysis that is drawn from community-policing is that as law enforcement pressure is applied in a "hot spot," crimes begin to emerge in "cool spots." Experts claim as "focused police interventions, such as directed patrols, proactive arrests, and problem solving, can produce significant crime prevention gains at high-crime "hot spots."[65] In a nutshell, "hot spot" policing suggests that if the environment is manipulated (i.e., patrols, arrests, etc.), then victims and offenders have fewer interactions and bandits have fewer opportunities to commit crimes, which ultimately results in a decrease in the crime rate. In addition, once a "hot spot" is controlled and

---

[64] Office of Justice Programs, "Mapping Crime: Understanding Hot Spots" (Washington D.C.: U.S. Department of Justice, August 2005), http://www.ojp.usdoj.gov/nij (accessed January 10, 2006).

[65] Ibid.

crime has decreased, bandits will move to a less patrolled area to continue their criminal activities. The described criminal migrations are occurring at the Southwest border. Apprehension statistics are a clear indication that IBC have migrated to areas less patrolled by USBP, such as the Tucson Sector.

The USBP has focused their resources in the urban areas along the international border for a variety of reasons, such as, preventing bandits from interacting with border community residents and restricting bandits from access to safe havens or camouflaging into the community. In addition, the *balloon effect* experienced in the Tucson Sector parallels the concept of "hot spots" in urban areas. Once the community policing addresses a "hot spot" crime area, the crime moves into a less policed area. Similarly, when the USBP focuses enforcement efforts along the USMB, migrants and bandits move into less secured sectors. This shift was the intention of the USBP's concentrated border security strategy. Therefore, USBP was not surprised to see bandits and smugglers moving towards the Tucson Sector.

Then, why isn't the USBP Tucson Sector prepared to handle the influx of migrants? The answer could be a combination of issues, be they politics, resources or the simple notion that the geographical constraints would be a sufficient deterrent for migrants entering the U.S. The U.S. government must continue to develop and timely implement border security strategies that take into consideration the movement of illegal activities along the border in order to successfully secure the USMB, as described in Chapter II. However, the post-9/11 need to protect the U.S. from another terrorist attack requires intelligence analysts to observe for potential emerging terrorists threats along the international border.

Illegal smuggling is a growing national security concern. The similar characteristics and operational structures between illegal smugglers and terrorists cannot be taken lightly. Although there is no intelligence indicating that these networks are supporting terrorism, al-Qaeda continues to seek new ways to penetrate the U.S. As organized smuggling rings begin to financially support terrorist organizations, or facilitate terrorists' illegal entry, then one can argue that illegal smuggling constitutes a new form of terrorism. Given the above criteria, then DHS must recognize this new form

of terrorism as "smuggler-terrorism." If the U.S. overlooks this potential threat and is ill-prepared to swiftly modify border security efforts, then the nation will face a greater homeland security challenge. The next chapter will focus specifically on the USBP Tucson Sector implementation of the border security strategies and initiatives at the operational level. This will provide a comprehensive review of the operational tactics employed to respond to illegal cross-border activity, the socio-economic issues, and the balloon effect. The described operational structure is implemented into the ASB model in Chapter V.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. USBP TUCSON SECTOR OPERATIONS

A. USBP TUCSON SECTOR'S TACTICAL RESPONSE TO THE *BALLOON EFFECT*

The USBP Tucson Sector spans all of Arizona, excluding the area of Yuma, with 262 linear miles and 90,953 square miles.[66] The extreme weather conditions and the desolate, vast and rugged terrain combined with a lack of border infrastructure make it extremely difficult for the USBP to attain border security. According to the USBP Chief Nicely of the Tucson Sector, there is a dire need to increase technology and resources in order to establish control of the area.[67] In an effort to establish and maintain control of the ASB, the Tucson Sector has eight border patrol stations. These stations are located primarily in three smuggling corridors: the West Corridor (Ajo, Casa Grande, and Sonora), the Nogales Corridor (Tucson and Nogales), and the Naco-Douglas Corridor (Naco, Douglas, and Wilcox). Each of these corridors represents geographical areas that serve as gateways for specific, well-known smuggling routes and staging areas in Sonora, Mexico.[68] Another challenge that contributes to the USBP border enforcement is the various private, state, tribal and federal land ownership. This varying land ownership creates questionable jurisdictional authority in the Tucson Sector.[69] Jurisdictional questions require the USBP to creatively collaborate with a variety of entities in order to gain access and execute agreements regarding the patrol operational tactics in the Tucson Sector. These processes can be complex and time-consuming. As the USBP cooperates with other stakeholders, migrants are heading north.

Unauthorized migrants currently stage in six primary locations along the Sonora border. These identified staging areas are where migrants rendezvous with their smuggler, also known as "Coyote," prior to being guided north through the USBP Tucson Sector. Figure 2 identifies the known illegal smuggling routes that lead into each

---

66 These numbers do not add up because the Tucson Sector geographical area is not a perfect geometrical shape.

67 Chris Strohm, "Arizona Border Patrol Chief Cites Need for More Resources, Personnel," *GOVEXEC.COM,* April 25, 2005.

68 Father Rene Castañeda, in discussion with the author, June 2004.

69 Lisa Seghetti and others, "Border Security and the Southwest Border: Background, Legislation, and Issues," *Congressional Research Service* (September 28, 2005): 24.

corridor of this Sector. The staging area furthest from the international border is in Santa Ana, Sonora. From here, the migrants determine which route they will eventually use to cross the U.S. border. The decision of which gateway to use is based upon information provided by "scouts."[70] Migrants are generally directed through the towns of Altar, Nogales, Cananea, Naco, or Agua Prieta, in the State of Sonora.

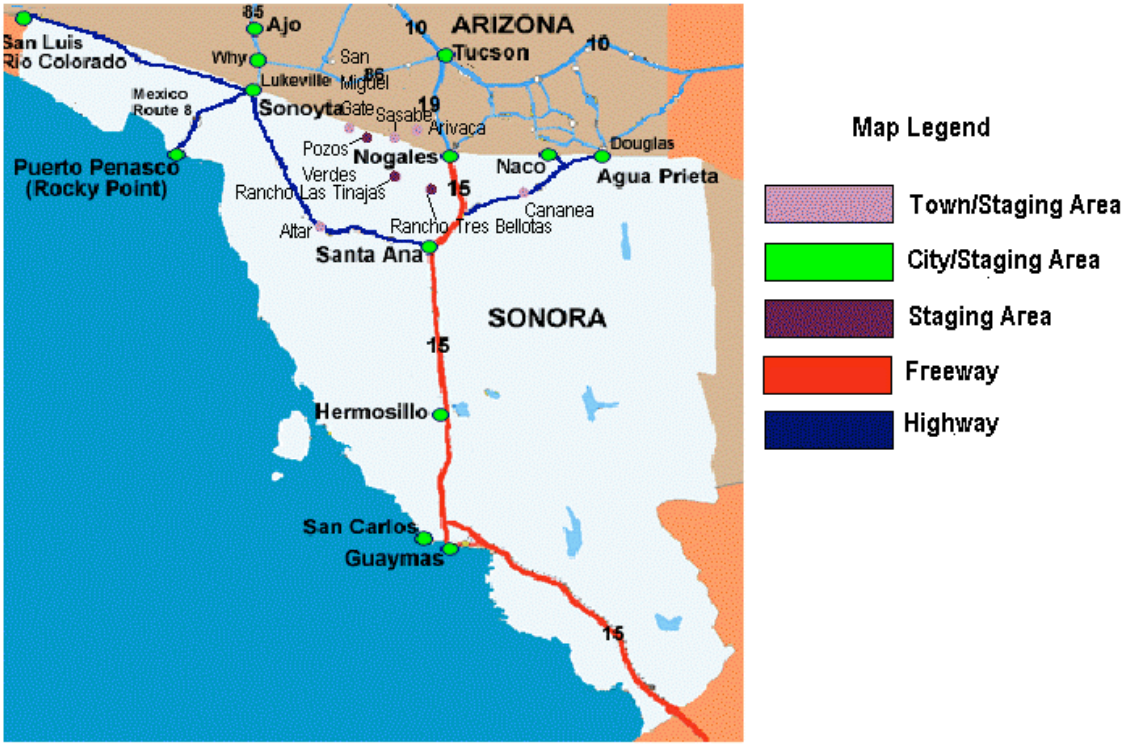

Figure 3. Tucson Sector and Sonora Illegal Smuggling Routes

- Altar, Sonora serves as a decision point to enter the U.S. through Pozos Verde, Sonora or the San Miguel Gate. These routes are within the West Corridor (Green).
- Rancho Las Tinajas leads migrants to Sasabe or Nogales. These routes are within the Nogales Corridor (Blue).
- Rancho Tres Bellotas lead migrants through Arivaca, Arizona, also within the Nogales Corridor (Blue).

[70] Scouts work for the Coyote and are located at observation posts in the border region to provide warnings to the Coyote.

- Cananea directs migrants to Naco or Agua Prieta, Sonora through the Naco-Douglas Corridor. This route is known for a high concentration of OTM migrants, primarily from Central and South America.[71]

1. USBP Tucson Sector Tactical Operations

The USBP Tucson Sector is divided into a grid system with each border patrol station responsible for a determined number of grids. Each grid represents approximately seven square miles. However, if the area encompasses a high-population hub, then this grid may be broken down into smaller areas (i.e., 1A, 1B, 1C and 1D). This division serves many purposes such as assigning and identifying the location of agents and resources, as well as for data collection. For example, when an unauthorized migrant is apprehended the border patrol agent asks the migrant to identify his/her point of entry. The border patrol agent then records the approximate point of entry and where the migrant was apprehended. This information is provided to the intelligence unit for tracking illegal migrant routes and patterns. However, many times the migrant does not provide accurate information because the migrant is not from the area. As stated earlier, migrants are distributed to each color-coded route accordingly. If the USBP learns what color each route is and then requests that the migrant indicate the color of their route, this information may provide a more accurate picture to the intelligence unit.

While the number of agents varies depending on each station and the extension of the pre-determined area of responsibility, on average there are four shifts per station in a 24-hour period (e.g., Midnight – 8 AM, 6 AM – 2 PM, 2 PM – 10 PM, and 6 PM – 2 AM). Every agent receives a daily schedule (G-481). This schedule identifies the location and equipment assignments made to each agent with each unit by the Shift Supervisor. Before the beginning of each shift, the Shift Supervisor conducts a briefing (also known as muster), which runs for about 15-30 minutes and gives supervisors and agents the opportunity to address officer safety issues, receive intelligence updates, border patrol policies and procedures, and ask questions on directives.

2. Nogales Border Patrol Station

Nogales, Arizona is the largest border community along the Arizona-Sonora border and represents the economic focal point, which leads into the CANAMEX

[71] Mexican Grupo Beta Official, Tortuguita check-point in Sonora, Mexico, in discussion with the author, June 6, 2005.

Corridor.[72] During the 1990s, downtown Nogales, Arizona suffered from a lack of border control so Operation Safeguard was created. As part of Operation Safeguard, the USBP has concentrated resources in this area since 1998. To understand Operation Safeguard, it is important to comprehend the USBP station operations, the advancements made by Nogales, and Nogales' significance along the Arizona-Sonora boundary.

The Nogales Border Patrol Station is only one of eight border patrol stations within the Tucson Sector. It currently houses fewer than 200 agents, yet their duties are immense. For example, in 2004, the Nogales Border Patrol Station apprehended 77,560 Mexican nationals and 1,396 OTMs, seized 101,700 lbs. of marijuana (a street value of $81,424,000.00), 879 lbs of cocaine (a street value of $28,611,399.00),[73] seized 1034 vehicles, and recuperated 41 stolen vehicles.[74] The USBP holds dual authority to arrest administratively or criminally. Therefore, the USBP can prosecute any person involved in human smuggling. The goal in granting this authority to the USBP aims at decreasing death in the desert and reducing the overall Arizona crime rate. In fact, since 1999, the crime rate in Santa Cruz County has decreased by 49% as a direct result of the USBPs concentrated enforcement in the urban area. Therefore, the USBP's border security strategy demonstrates positive results when implemented. The strategy is clearly strong in the urban areas, but less strong in the rural areas, the vast majority of the USMB, leaving it under secured.

The Nogales Border Patrol Station oversees 32 miles of international border (1100 square meters). This station encompasses the largest border community in Arizona with Nogales' population at over 40,000. This community experiences strenuous weather conditions: in the summer highs exceed 110 degrees and in the winter low reach 10 degrees. The Nogales Border Patrol's operations are essentially divided into three layers of enforcement, a model used by DOD but adjusted to the USMB given its peaceful non-militant nature. Each layer is concentric and three-dimensional, including underground (sewers and tunnels), ground and air operations. This operational set-up demonstrates the

[72] CANAMEX Corridor is a Congressionally defined economic corridor that encompasses Canada, U.S. and Mexico. In the U.S. there are five states that are part of the CANAMEX Corridor: Montana, Idaho, Nevada, California and Arizona.

[73] The street value of cocaine is significantly higher than for marijuana; note the difference in price.

[74] Lou Maheda, U.S. Border Patrol Agent, Presentation on Nogales Border Patrol Station Operations in Nogales, AZ, June 6, 2005.

efforts of USBP to deploy resources to the "hot spots" along the border, while gaining control along the outskirts of each concentrated area. Tactics used by both law enforcement and DOD. Figure 4 represents the Nogales Border Patrol Station's layers of enforcement:

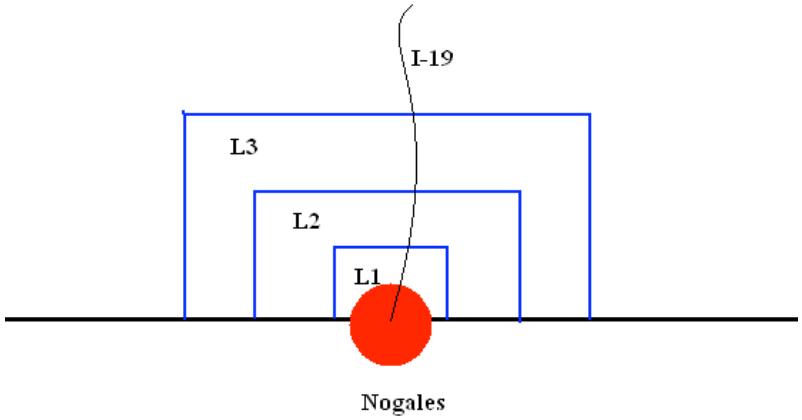

Figure 4. Systematic Representation of the Nogales Border Patrol Layers of Enforcement

Note: This diagram is not drawn to scale; it is simply a visual to understand the functionality of the layers of enforcement.

The first layer (L1) is within the urban area of the City of Nogales. This layer focuses on improving the quality of life and safety, decreasing crime, and enhancing community relations. The USBP seeks to accomplish deterrence with a large presence of border patrol. The USBP considers the urban area as a potential safe-haven for illegal entrants because the unauthorized migrant blends within the population; accompanied by criminal activity and public health concerns augmenting the challenges faced by USBP to enforce U.S. immigration law. In this first layer of defense, the USBP has localized the patrol areas, increased technology and infrastructure improvements (fencing[75], cameras, and sky watch towers[76]), and employed high profile response units. Each High Profile

[75] There are 4.2 miles of fencing to the east of DeConcini POE and there are two miles of fencing to the west of Mariposa. In between DeConicini and Mariposa there is fencing. One of the biggest challenges is maintenance; fences are compromised on a daily basis.

[76] Sky Watch Towers are equipped with both day and night vision cameras that are operated by one US Border Patrol agent, who can through the dispatch center deploy US Border Patrol agents to the incident.

Response Unit includes eight vehicles – each one manned and deployed along the fence as a deterrence mechanism. The vehicles have protection around windows to ensure the safety of the agent, who is routinely subjected to rock throwing and shooting. In 2004, there were 24 rock assaults, which resulted in over $70,000 in damage.[77]

In addition, bike units are deployed in both the city and canyon areas. This unit works in packs of six crews per shift. There are two bike shifts: 7-3 PM and 3-11 PM. Additionally, some camera poles along the Nogales downtown area have big spotlights to serve as deterrence and imply that the USBP is "watching." This first layer also includes the sewers and tunnels because the majority of tunnels serve as a focal point of illegal operations.[78] Smugglers continue to use tunnels to transfer drugs and humans across the border.[79] The average length of a tunnel ranges from 40 feet up to 320 feet. Some tunnels are drivable and are connected to the public sewer infrastructure of Sonora. The USBP continues to use intrusion devises, remotely operated by a public service announcement system, lights, sirens, and three to five agents per shift to patrol the sewers and tunnels. However, these defense mechanisms can only be used once a tunnel has been detected. This is another challenge that the USBP continues to face.

The second layer (L2) is area immediately surrounding the urban area of Nogales. This suburb area functions as a first line of defense for the area to the east, west and north of L1. If deterrence works in the first layer, human smugglers will seek alternative routes in the suburbs to cross the international border, known as the balloon effect. In this layer of defense, which also includes air operations, border patrol uses sensors, cameras, stadium-like lighting, trucks with scopes and sky watchtowers.[80] In addition, there are 40 helicopters, which are employed 24 hours a day and include at least one Border Patrol

---

[77] Lou Maheda, U.S. Border Patrol Agent, Presentation on Nogales Border Patrol Station Operations in Nogales, AZ, June 6, 2005.

[78] Old technology helps control the tunnels – old police radio, camera, TV screen.

[79] Anthony P. Placido, Drug Enforcement Administration, Acting Assistant Administrator for Intelligence, testimony before the House Subcommittee on Criminal Justice, Drug Policy and Human Resources, "Threat Convergence Along the Border: How Does Drug Trafficking Impact our Borders?" June 14, 2005, http://www.dea.gov/pubs/cngrtest/ct061205.html (accessed December 25, 2005).

[80] Sky watch towers: hydraulic boxes into the air for about 18 feet, equipped with day/night cameras. An agent stands around, monitoring the cameras; he can switch over from the control center. If he needs to he comes down and jumps into his vehicle to apprehend illegal immigrants.

Search Trauma and Rescue (BORSTAR) Team agent. BORSTAR is a search, trauma and rescue unit that was implemented to save lives in the rugged terrain and extreme weather conditions of the desert.

Using Operation Gatekeeper's measures for progress as a benchmark of operational control, then the USBP should expect a decrease in apprehension to occur in L1 with an increase of apprehension in L2 just as it did in the San Diego and El Paso Sectors. Essentially, this indicates that USBP has established and maintained control in L1 and is shifting illegal border activity away from the urban area, also known as a "hot spot." As described in Chapter III, the "hot spot" is where there is a high concentration of social problems.

The third layer (L3) is the immediate area surrounding L2, which is the most rugged and rural area. L3 encompasses a first line of defense for the area to the east, west and north of L2. Border patrol does not clearly define the northern, interior parameter of L3. The USBP goal in the third layer of enforcement is to disrupt organized human and drug smuggling operations by using undercover units (10 -11 agents) and by staging the Interstate-19 (I-19) checkpoint.[81] Essentially, these undercover units use intelligence gathering to prevent illegal cross-border activity by going into stash houses, where they seek informants and restrict egress routes. The I-19 checkpoint is a tactical operation to deter illegal migrants from heading further north into the U.S. In addition, the checkpoint is mobile to increase the element of surprise and the deterrence element against illegal migrants. Moreover, Congress requires the USBP to rigorously patrol every 14 days between two spots along the I-19. However, smugglers know about the operation, which decreases the element of surprise and deterrence.

In addition, L3 extends into the Mariposa Canyons of Santa Cruz County.[82] This area represents extremely rugged terrain, making it difficult for the USBP to access many areas of the canyon. However, an additional area of concern is faced by law enforcement on both the Mexican and U.S. sides of the border in L3 – extensive evidence of the sexual

[81] The third layer employs 6% of the personnel and 19% of all the arrests occur in this layer.

[82] Lou Maheda, U.S. Border Patrol Agent, Presentation on Nogales Border Patrol Station Operations in Nogales, AZ, June 6, 2005.

assault and rape of migrant women and children by human smugglers.[83] The USBP witnesses this violence during the apprehension of migrants and their need of medical services. Meanwhile to the East of the Nogales POE, the Patagonia Canyons are considered a drug smuggling route.[84] Therefore, drug interdictions are usual in L3. However, the USBP has recently seen an increase of unauthorized aliens' apprehensions in this area as well.

As described, the USBP Tucson Sector operational structure are three concentric layers of defense, however, depending on where the migrant enters along the border it does not mean that they will go through all layers of defense. The next chapter will identify 13 most frequent illegal human and drug smuggling routes in the Tucson Sector and explain this situation in greater detail. Furthermore, the operational structure in conjunction with the identified routes will be implemented into the ASB model to provide a predictive picture for policy makers and operational planners of how border security resources can be used more efficiently.

[83] Mexican Grupo Beta, Nogales U.S. Consulate, Tour of the Mariposa Canyon, June 2004.

[84] Mexican Grupo Beta, Nogales U.S. Consulate, and Immigration and Customs Enforcement tour of the drug smuggling route, September 2004.

V. ARIZONA – SONORA BORDER MODEL

A. INTRODUCTION

The USBP is set up in distinctive areas of operation, each with designated resources. As discussed above, the operations function in a three-tiered concentric system of defense. The San Diego Sector's Operation Gatekeeper and the El Paso Sector's Operation Hold the Line had a significant impact in countering illegal cross-border activity. Given the success of USBP in both San Diego and El Paso Sectors, one can conclude that the USBP defense alignment in these sectors is the appropriate operational structure to establish and maintain border control. The ASB model draws from this conclusion and attempts to provide insight to the USBP efforts in the Tucson Sector to illegal cross-border activity.

1. Arizona-Sonora Border Model Theory

The ASB model explains illegal cross-border activity situations in the USBP Tucson Sector, or any part of it, and forecasts the effectiveness of USBP border security resources deployment. For purposes of this model, the USBP Tucson Sector is defined as the USBP border security zone, also known as the "border zone" area of operation. This model focuses on the problem of unauthorized migrants within the border zone, once the USBP deterrence strategy has failed and migrants are in the U.S. Although this model is specific to the USBP Tucson Sector, it can be implemented anywhere along the Southwest Border with minor modifications. Similar to Schilling's Border Control Model, the ASB model, situation can be viewed as a depicted in Figure 5.

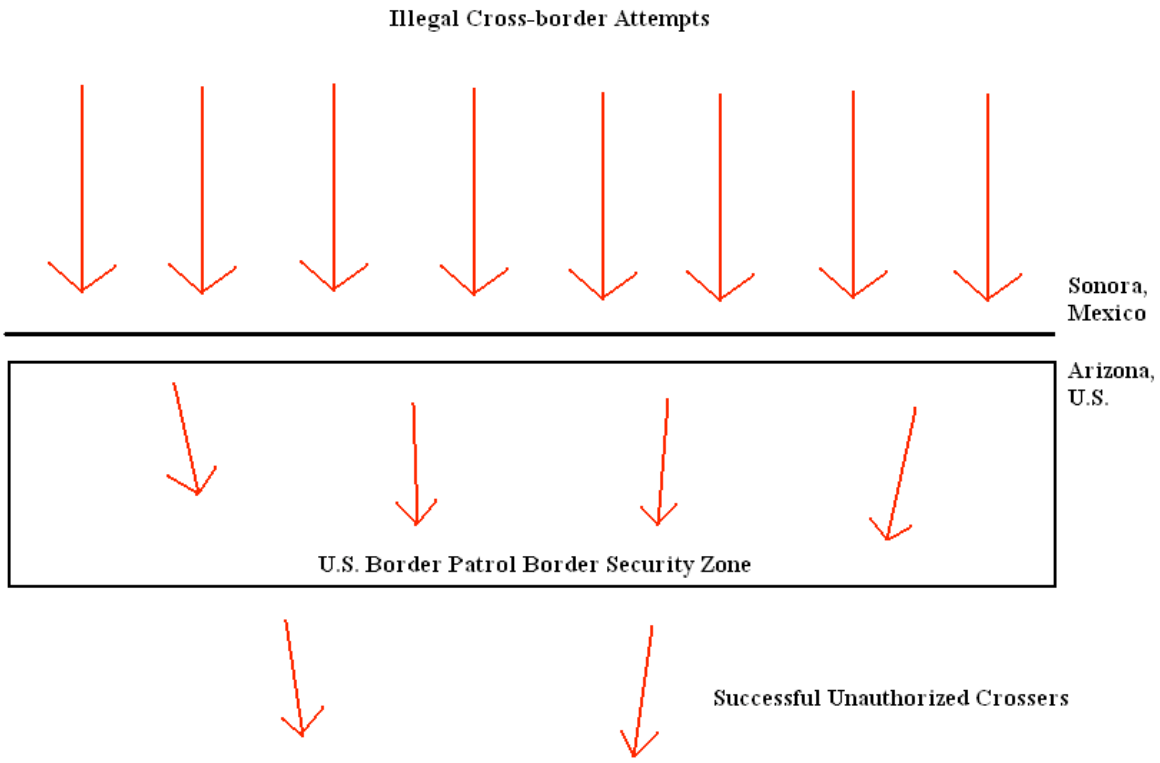

Figure 5. Systematic Representation of the AZ-Sonora Border Model

(After: Schilling, G.F. "Analytic Model of Border Control" [Santa Monica, CA: RAND, December 1970]).

As previously described, the USBP Tucson Sector is divided into three corridors or gateways through which migrants and smugglers illegally cross U.S. borders: the West Corridor, Nogales Corridor and the Naco-Douglas Corridor. After several border tours and interviews with border security experts, the following most frequented 13 routes (j) were identified, as shown in Figure 6:

- West Corridor: Organ Pipe National Park, Tohono O'odham Nation – San Miguel Port of Entry and the Tohono O'odham Nation – Pozos Verde.
- Nogales Corridor: Coronado National Forest, Mariposa Canyon, the Nogales POEs and Patagonia.
- Naco-Douglas Corridor: Fort Huachuca Mountains or Copper Canyon, the Naco POE, San Pedro Valley, Whitewater Wash area, the Douglas POE and the San Bernardino Valley.

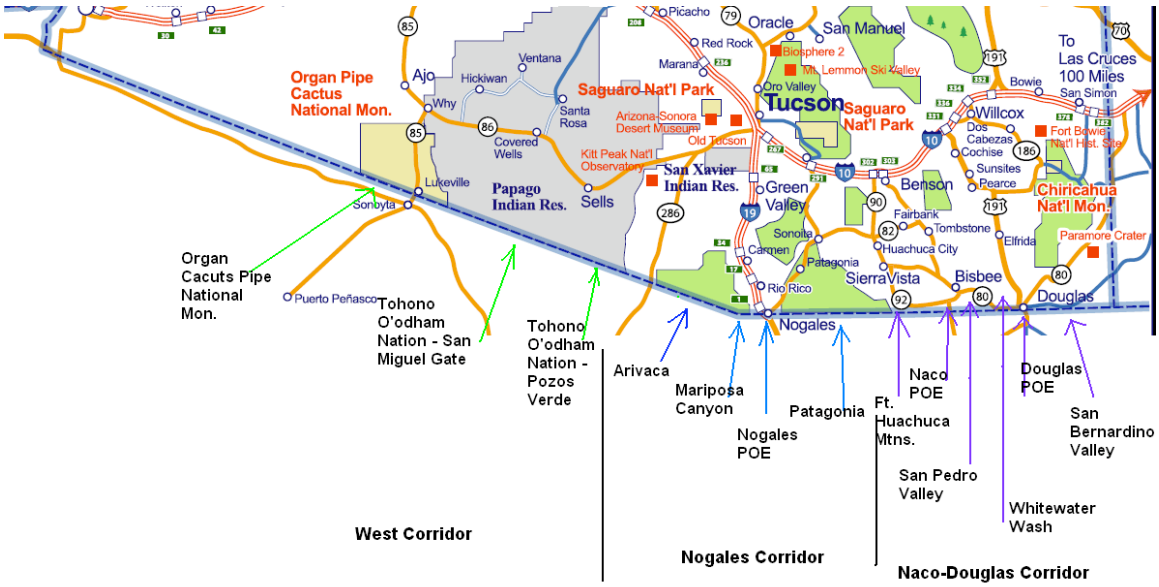

Figure 6. Identified Most Frequent Illegal Human and Drug Smuggling Routes

Generally, on the ground, drug smugglers and human smugglers do not use the same trails to cross into the U.S. Instead, each organized crime respects each other's independent area of operation. However, given the geography, there are instances where overlap occurs, primarily for two reasons: (1) drug smugglers and human smugglers are part of the same organization and use the migrants to help transport contraband into the U.S. (2) human smugglers work in cooperation with drug smugglers to get contraband across the border, while distracting the USBP with the task of apprehending illegal immigrants.[85] Whether the route is for drug or human smugglers, it falls within one of the USBP layers of defense, as shown in Table 2.

Routes (from E to W along border)	Routes	
	Drug	Migrant
West Corridor (L3)		
Organ Pipe National Park	X	X
TO Nation – San Miguel	X	X
TO Nation - Pozos Verde		X

[85] Ramses Castro Delgado, Commander, Nogales Police Department, Sonora, in discussion with the author, March 2004.

Nogales Corridor		
Coronado National Forest (Arivaca) (L3)	X	X
Mariposa Canyon (L2)		X
Nogales POE (L1)	X	X
Patagonia (L2)	X	
Naco-Douglas Corridor		
Ft. Huachuca Mountains (Copper Canyon) (L3)		X
Naco POE (L2)	X	X
San Pedro Valley (L3)	X	X
White Water (L2)		X
Douglas POE (L1)	X	X
San Bernardino Valley (L2)	X	

Table 2. Identification and Classification of Illegal Routes

Further, each drug and human smuggling route is identified in each defense layer, with its respective border security technology, as explained in Chapter IV. Given the sensitivity of identifying the exact amounts of resources employed by the USBP, this model only identifies whether or not USBP has capability in a given area of interest. For a better application of the ASB model, it is recommended to include the exact numbers of resources available in each layer of defense. Use of resource data in the model determines the deterrence or prevention rate of illegal cross-border activity. These equations and measures are explained in greater detail throughout this chapter.

B. ARIZONA-SONORA BORDER (ASB) MODEL

The ASB model is an analytic model that incorporates factors relevant to the problem of illegal cross-border activity in the USBP Tucson Sector. While a model can never fully reflect the true complexity of illegal cross-border activity factors, the approach described in this thesis draws from the notion that illegal cross-border activity has some structural features that lend themselves to analytical modeling. In other words, illegal cross-border activity is not a random event, but yet organized and structured occurrences, and can be modeled as shown in this thesis.

This ASB model is to assist policymakers and operational planners to address the problem of illegal cross-border activity in a logical and systematic approach. The mathematical model can help organize, articulate and analyze the essential problems in the USBP Tucson Sector. The ASB model provides insight into the complex interdependencies that exist in establishing and maintaining control of the international border with Mexico. It captures the interactions among the location and intensity of cross-border activities, apprehension rates and migration rates. This model is an attempt to offer a mathematical solution to the problem of optimal deployment of border security resources in the USBP Tucson Sector along the ASB.

There are 13 illegal routes, as shown in Figure 7, that lead illegal border crossers into one of the three possible defense layers denoted L1, L2 and L3, as described in Chapter IV. As depicted in Figure 7, routes 1-4, 8 and 10 cross the border in layer 3 of the USBP operational structure, routes 5-7, 9, 11 and 13 cross the border in layer 2 of the USBP operational structure and routes 6 and 12 cross in the urban area or layer 1 of the USBP operational structure. (Figure 7 denotes layer 0. This is the area in which the border security efforts of USBP are no longer present.) As any model, the ASB model makes several assumptions. This model only looks at the effectiveness of USBP to apprehend IBC once in the border zone; therefore it assumes that the migrant was not deterred from entering into the U.S. In addition, it takes into consideration that smugglers use different means to travel from the border to their destination and therefore migrants move at different speeds. However, on average it takes a migrant from the ASB to Phoenix, Arizona (L0) anywhere between four to five days.[86] Therefore, the ASB model deduces that the USBP window of apprehension is five days from the day the migrant entered the border zone. For simplification purposes, the model will assume an IBC always moves from a lower layer of defense to a higher level. This assumption draws from the "balloon effect," defined in Chapter III, where IBCs move from areas of significant enforcement to areas of lower enforcement. In other words, an IBC will not voluntarily move from a lower risk area to a higher one.

[86] Migrant in discussion with the author, Altar, Sonora, June 7, 2005.

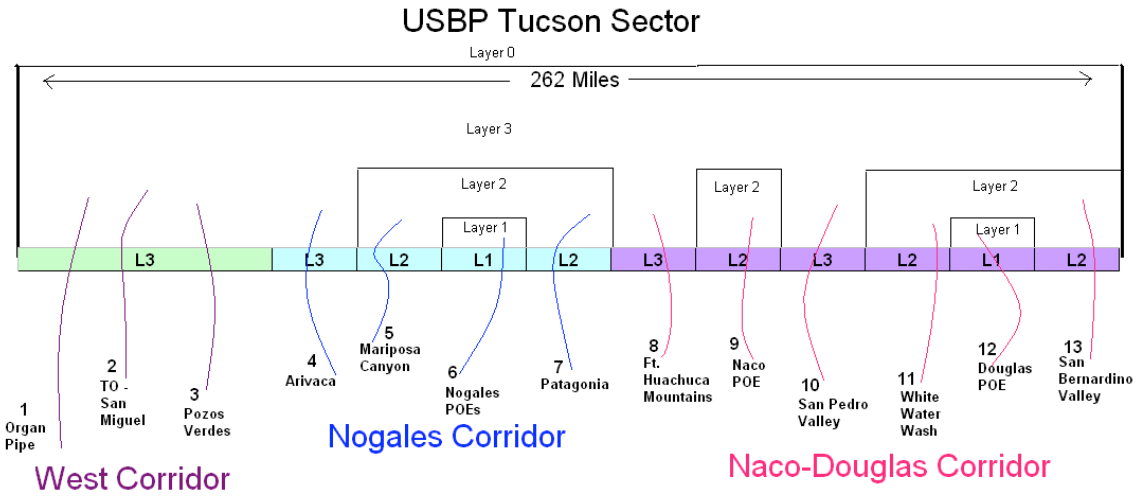

Figure 7. Systematic Picture of the 13 Identified Illegal Routes into the USBP Tucson Sector

Given the above, the ASB model presumes that depending on the route the IBC chooses to enter the U.S. they will be subject to one, two or three layers of USBP defense alignment. For example, if an IBC chooses to enter the U.S. through route five, then that IBC will only be exposed to USBP's layers two and three. Likewise, if the IBC opts for route two, then the IBC will only experience USBP's third layer of defense. Consequently, the ASB model assumes that in the first day the migrant enters the U.S. at a designated layer of defense, as depicted in Figure 8, three things can happen within that five-day period:

1. The migrant is apprehended;
2. The migrant remains within that layer of defense; or
3. The migrant travels to the next layer of defense.

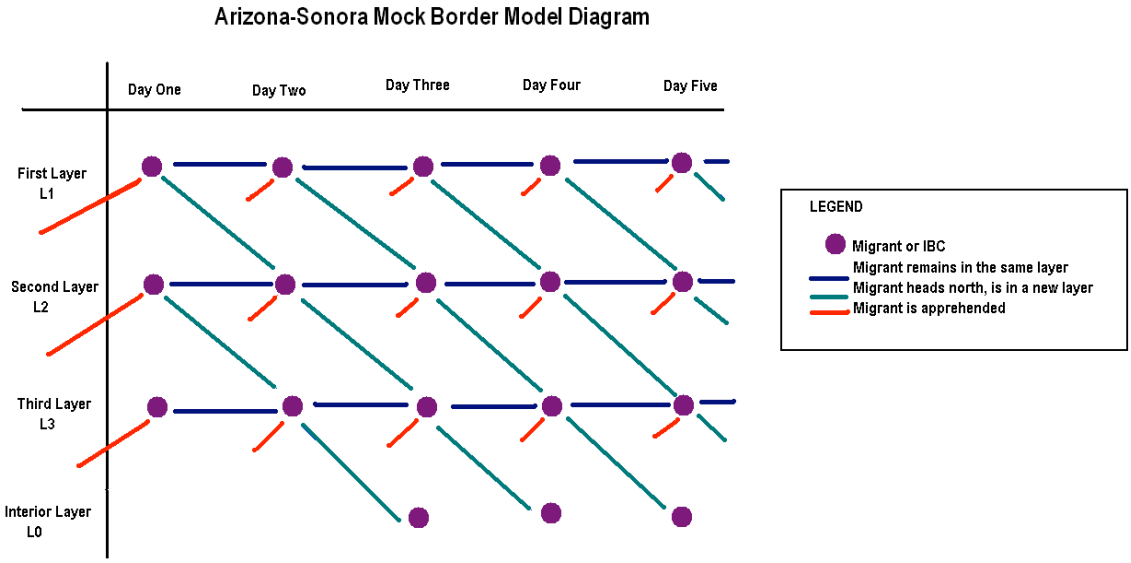

Figure 8. Arizona-Sonora Border Model Diagram

At the same time, this model answers the question: given the distribution of IBCs across the 13 routes and given the migration rate (ε), how should USBP allocate border security resources in the most effective way? In order to answer this question the ASB model presumes that the apprehension rate (β) is directly related to the effective mixture of USBP assets in the interested area, this is explained in greater detailed later in this chapter. Lastly, the model's measures the border security system's effectiveness by the number of IBC's that remain in the system (without apprehension) for more than five days or traveled sufficiently north to be outside the border zone, $L_1 _ L_3$. Table 3 provides a legend for the ASB model.

Notation	
$N_i(t)$	Number of IBCs in Layer *i* at time *t*. i=1,…,3
$I_i^j(t)$	Number of IBCs that attempt to cross the border using route j in L_i at time t. i=1,…,3, j=1,…,13.

β_i^j	Apprehension probability of IBCs who entered through route j at level L_i
ε_i	The rate at which IBCs move from L_i to L_{i+1}
m_i	USBP force size at L_i off the border
m_i^j	USBP force size at the border in route j and L_i
F_i	The effect of the mix of USBP assets on the apprehension probability in L_i
$\overline{\theta_i} = (\theta_i(1),...,\theta_i(n))$	Resources vector in L_i (e.g., helicopters, UAVs, vehicles,…)
$\overline{\theta_i}^j = (\theta_i^j(1),...,\theta_i^j(n))$	Resources vector deployed at the border in route j and L_i

Table 3. Notation Legend for the Arizona-Sonora Border Model

1. Modeling Equations

The ASB model provides a forecast for the number of apprehensions at each layer of defense, given the migration pattern and the deployed mix of resources. This model can provide a general picture of the entire Sector or a specific picture of an area of interest, such as a route or series of routes. In this thesis, the analysis and description of the ASB model addresses the general picture within each layer of defense. The model captures a "snap-shot" of the situation, that it, it addresses the following question: "How many IBCs, out of N(1) IBCs that entered the US on a given day (t=1) are still at large 5 days later?" Therefore, the model does not project actual numbers of IBCs, but rather the success rate of the USBP as a function of the infiltration and migration patterns and the resources mix.

The first layer of the USBP operational structure is an urban area, also referred to as a "safe haven" for the IBC because the migrant has a better chance of blending in with the community. This is an additional challenge the USBP faces despite the higher level of enforcement in the urban area. Therefore, at time t, t=2,…, the number of IBCs in L_1 is equal to the number of IBCs in that layer at time t-1 minus those who were

apprehended or migrated to L_2. Recall that the only routes that enter L_1 are 6 and 12. Thus,

$$N_1(1) = N_1^{6}(1) + N_1^{12}(1)$$

$$N_1(t) = N_1^{6}(t-1)\left(1-\beta_1^{6}\right)\left(1-\varepsilon_1\right) + N_1^{12}(t-1)\left(1-\beta_1^{12}\right)\left(1-\varepsilon_1\right) \quad t=2,\ldots \qquad (1)$$

Where $N_1(t)$ is the number of IBCs in L_1 at any unit of time, t[87];

$N_1(t-1)$ is the number of IBCs in L_1 at time, t-1;

$\left(1-\beta_1^{j}\right)$ is the fraction of IBCs present in L_1 in route j that were not apprehended;

$(1-\varepsilon_1)$ is the fraction of IBCs not apprehended in L_1 that did not leave the area;

To simplify the model exposition, we track the IBCs according to their entry route j and then sum up over the relevant routes, as demonstrated in Equation 1. Thus,

$$N_i^{j}(t) = N_i^{j}(t-1)\left(1-\beta_i^{j}\right)\left(1-\varepsilon_i\right) + N_{i-1}^{j}(t-1)\left(1-\beta_{i-1}^{\ j}\right)\varepsilon_{i-1} \quad i=2,3 \qquad (2)$$

Where $N_i^{j}(t)$ is the number of IBCs, who crossed the border through route j, present in L_i at time t.

When the USBP border security system is successfully bypassed, this means that the IBCs have crossed the border zone reaching far enough north where USBP is no longer present and have avoided USBP apprehension. In this model this area is denoted by L_0. It is important to note that all IBCs must have successfully crossed the third layer of USBP operational structure prior to escaping apprehension and arriving to L_0, therefore, the number of IBCs who successfully "overrun" the border security system during the five day scenario is:

$$N_0(5) = \sum_{t=1}^{4}\sum_{j=1}^{13} N_3^{\ j}(t)\left(1-\beta_3^{\ j}\right)\left(\varepsilon_3\right) \qquad (3)$$

Where $N_0(5)$ is the total number of IBCs in L_0 on the fifth day of the scenario.

[87] The unit of time is one day.

It must be noted that not all IBCs who attempt to reach their final destination L_0 in the U.S. outside of the border security zone will achieve such goal within the five-day period analyzed in the ASB model. Consequently, the final number of total IBCs illegal in the U.S on the fifth day is:

$$N_{Total}(5) = N_0(5) + \sum_{i=1}^{3}\sum_{j=1}^{13} N_i^{\,j}(5) \tag{4}$$

The apprehension rate β depends on the size of the USBP manpower force (m) and the resources vector (θ) available to the USBP agents, such as air support, horses, SUVs, bicycles, quads, cameras, and night-goggles, among many others. This can be mathematically expressed in general terms as follows:

$$\beta_i^{\,j} = (1 - e^{-F_i^j(\theta_i^j, m_i^i)}) \tag{5}$$

The function F_i^j defined on the set of the USBP assets, represents the effect of the mix of assets on the apprehension probability in L_i. This function can be estimated from field data. For purposes of this thesis the model is analyzed in terms of the resulting apprehension rates $\beta_i^{\,j}$.

C. MODEL EXTENSION AND APPLICATION

As with any mathematical model, the ASB model does not reflect the real complexities present along the border. Yet, the model provides insight into improving the current border security system. Before adapting the variables, parameters and coefficients of this model, it is important to explain the applicability of this model to the real life of border security.

For certain situations, it is important to consider the different types of IBCs, and their respective strengths and weaknesses. Each type of IBC uses different tactics to enter the U.S. As previously mentioned, there are guides, who recruit, transport, and direct potential drug smugglers and/or groups of unauthorized migrants across the border. They operate in staging areas in Mexico and link up with mounted smugglers or scouts across border. Their strengths include: possession of weapons, communication ability on

both sides of the border, proven tactics, and knowledge of areas of "sanctuary" or "safe heavens" on both sides of the border. However, their weaknesses include: large footprint trails resulting from traveling groups, the necessity to cross through the USBP border security zone constantly on trips into and out of the U.S., and the need to operate in a clandestine manner within safe areas in support of operation.

Scouts make up a sub-group of illegal smugglers, who establish observation posts along ridgelines and serve as lookouts to warn drug or human smugglers as to the presence of the USBP. The scouts possess weapons and night vision and communications devices as they utilize proven tactical procedures. They occupy the high grounds to take tactical advantage of the topography. Yet, they function with limited re-supply capabilities, restricted transportation access, and static positions close to border.

Another type of IBC is a drug smuggler. The drug smugglers enter the U.S. to conduct "drops" of prepackaged drugs. They are usually unarmed and will abandon drug packages if spotted by the USBP. They utilize multiple avenues of approach, the element of surprise, and proven tactical procedures. Yet, because drug smugglers serve as "mules" within the drug world, they are unarmed and bear heavy loads (40 lbs) of prepackaged drugs, they are low-ranking members of the drug organization and they are not read into mission plan. Additionally, they have limited to no communications.

The most common known IBCs are the known economic migrants, who illegally enter the U.S. with support from guides. Economic migrants, with the help of guides, utilize multiple avenues of approach, an element of surprise, and proven tactical procedures. Their biggest strength is that they tend to travel in large numbers, making it more difficult for USBP to apprehend the large group at once, however their weakness is that by traveling in groups makes them more detectable by USBP. When migrants notice USBP in the area, they scatter requiring more USBP resources to detain migrants from remaining unauthorized in the U.S. Similar to the drug mule, they are unarmed. In addition, they possess no re-supply capabilities. Further, they usually require a guide, they have limited access to transportation, and they lack knowledge of the natural hazards

in the desert or the topography. Finally, economic migrants tend to be unknowledgeable of the actual distance to their final destination and, therefore, are many times ill-prepared to walk for four or five days across the desert.

The ASB model can be extended to account for the variations associated with each specific IBC group. The above equations can be subscripted where, for example, $N_{i.k}^{j}$ can refer to a specific type *k* of IBCs, such as an economic migrant crossing through route j in layer $L_{i,}$. Likewise, $\beta_{i,k}^{j}$ reflects the efficiency of the border security to deal with IBCs of type *k*. These characteristics are important in relation to the migration rate of the different IBCs. For example, a drug mule-traveling rate is slower than of an economic migrant. This is because a drug mule will be carrying the drugs across the border. A sack of marijuana typically is forty pounds. Let's assume that the drug mule is carrying forty pounds of marijuana on its back; on the other hand, the economic migrant carries a backpack and water, maybe up to ten pounds. The difference in weight will either increase or decrease the IBCs migration rate. Another factor to take into consideration is the terrain, particularly the number of canyons the IBCs will need to travel through in order to reach their destination: the more rugged the terrain the slower the IBC's migration rate. For example the terrain along route 5 is much more rugged than along route 11. Route 5 is filled with steep canyons and high hills, where route 11 is more of a flat plain. The topography can facilitate or impede travel as well as provide "safe havens" for the IBCs and the USBP.

The ASB model is a "plug and play" type model that may assist in forecasting what may occur along the border within a five day window, given a certain IBCs distribution and USBP resource deployment. The difficulty of acquiring current data from USBP caused the data to derive from older USBP apprehension statistics from 1994 to 1999 in the USBP Tucson Sector.[88] Given a certain distribution of IBCs across the 13 routes and different migration rates, the question is: how USBP Border Security resources should be deployed to be most effective? Specifically, the model examines the effect of apprehension rates, which depend on the resources mix, on the number of IBCs

[88] U.S. Department of Justice, Immigration and Naturalization Service, Annual Apprehension Statistics, Tucson Sector. Washington, D.C. (October 1994 -1999).

that successfully evade the USBP. Given the functional relation F (see equation (5)), one can do the transformation to a desired deployment of resources.

For purposes of this model's application in this thesis, as shown in Tables 4, 5 and 6, the following assumptions and inputs are used:

- The distribution of IBCs among the 13 routes in one day is derived from USBP station monthly apprehension statistics from 1994 to 1999.[89] (For the purpose of the numerical analysis we assume a total of 1000 IBCs).
- The determination of the apprehension rate for each of the 13 routes is based on USBP station monthly apprehension statistics from 1994 to 1999.[90]
- The determination of the migration rates is subjective and is based on the author's knowledge of the border. The migration rates vary between .4, .5 and .8 depending on the USBP operational layer, L_1, L_2 or L_3, respectively. It is assumed that the facility of migrants to travel would decrease in areas that have greater concentration of natural hazards, creating a greater difficulty to cross the terrain.

The ASB model has a total of eleven parameters: eight apprehension rates (β) and three migration rates (ε). The eight apprehension rates correspond to eight USBP stations that cover certain subsets of the routes. Stations Nogales and Douglas are in L1 and cover routes 6 and 12, respectively. Stations Nogales, Naco and Douglas are in L2 and cover the routes subsets {5, 7}, {9} and {11, 13}, respectively. Stations Ajo, Casa Grande, Tucson, Wilcox, and Naco are in L3 and cover the routes subsets {1}, {2, 3}, {4}, {8} and {10}, respectively. It is important to note that USBP Tucson and Wilcox Stations are farther north, in L3, therefore are located to apprehend IBCs as they travel north from the border. The apprehension rates are associated with USBP stations rather than routes because of two reasons: USBP data management and resource allocations. Each USBP station maintains apprehension data; intelligence analysis of this data then

[89] An illegal immigration demographic study claims that the percentage of migrants apprehended has a correlation ratio of .9 to the number of IBC in the area. [*For more information see*: Thomas J. Espenshade, "Using INS Border Apprehension Data to Measure the Flow of Undocumented Migrants Crossing the U.S. – Mexico Frontier," *International Migration Review*XXIX, no. 2 (Summer 1995): 545.] U.S. Department of Justice, Immigration and Naturalization Service, Annual Apprehension Statistics, Tucson Sector. Washington, D.C. (October 1994 -1999).

[90] As routes lead north migrants are entering new USBP stations' areas of operation, as migrants leave one USBP layer to the next, averages of apprehension were calculated to determine a more accurate picture of the remaining number of IBCs in the border security zone in a five day period or are at large. U.S. Department of Justice, Immigration and Naturalization Service, Annual Apprehension Statistics, Tucson Sector. Washington, D.C. (October 1994 -1999).

determines border security resources allocation to each layer of defense. Since apprehension rates are related to the resource allocation in each area it is logical to associate them with USBP stations instead of routes. It is important to note that resources and fungible across stations, but fixed for the Sector as a whole. The ASB model allows policymakers and operational planners to reallocate resources within the Tucson Sector understanding that resources will shift from one station to another. These analyses will provide a predictive picture of what will occur to the number of migrants within the border zone or still at large within a five-day window. Similarly, the other parameter (i.e. migration rate) used in the ASB model assumes that the three migration rates are determined in each layer of defense. As mentioned above, this assumption can be easily relaxed in a more detailed model.

The distribution of the IBCs across the 13 routes is determined by USBP station apprehension percentages. It has been asserted that the number of migrants apprehended has a strong correlation with the number of IBCs in the area.[91] Therefore, this measure is reasonable given the unavailable empirical data of the actual number of IBCs.

For the analysis to follow, as indicated above and in Tables 4, 5 and 6, the following base case is assumed:

USBP Operational Layer	Migration Rate
L1	.8
L2	.5
L3	.4

Table 4. ASB model Input Data: Migration Rates in each USBP Operational Layer

Routes	Apprehension Rate
6	.6
12	.4

[91] Thomas J. Espenshade, "Using INS Border Apprehension Data to Measure the Flow of Undocumented Migrants Crossing the U.S. – Mexico Frontier," *International Migration Review* 29, no.2 (Summer 1995): 545.

5 and 7	.2
9	.5
11 and 13	.3
1, 2 and 3	.8
4	.6
8 and 10	.1
Average of 4, 8 and 10	.27

Table 5. ASB model Input Data: Migration Rates in each USBP Operational Layer

As noted earlier the apprehension rates derive from USBP station statistics, some routes are within the same operational layer of a USBP station. Therefore, the same apprehension rate was used for those routes, as shown in Table 5. Also, as routes (5 – 7, 9, 11-13) lead into the third operational layer, an average of the apprehension rates for routes (4, 8 and 10) are calculated for a more accurate apprehension rate as migrants move through the USBP operational structure.

An analysis synthesis of the total number of IBCs still at large or remain in the border zone in a five day period is as follows, as shown in Table 6:

Routes	**USBP Operational Layer**	**Number of IBCs out of 1000**	**Number of IBCs evaded USBP**	**Percentage of IBCs evaded USBP**
1	L3	100	9.1	9.1%
2	L3	60	5.5	9.1%
3	L3	100	9.1	9.1%
4	L3	200	42.6	21.3%
5	L2	87	36.8	42.2%
6	L1	30	2.7	9%
7	L2	70	29.6	42.2%
8	L3	60	48.1	80.1%
9	L2	63	17.9	28.4%

10	L3	100	80.1	80.1%
11	L2	50	22.9	45.8%
12	L1	40	9.6	24%
13	L2	80	36.7	45.8%

Table 6. ASB model Input Data: IBC Distribution among the 13 routes and number of IBCs evaded according to the ASB model.

Next we perform sensitivity analysis with respect to some key parameters. Figures 9, 10, and 11 show the effect of varying apprehension and migration rates on the total number of IBCs that evade in five days the USBP system. The analysis is focused on routes {12}, {5 and 7}, and {8 and 10}, respectively. These routes present the highest percentage of IBCs that evade USBP in the border zone, given the parameters identified in Tables 4, 5 and 6.

Figure 9 identifies the analysis for route 12; the graph demonstrates the effect of migration rates on apprehension in L_1; as the migrants move faster the USBP ability to apprehend decreases. In addition, note the intersection point at around $\beta = .15$; for low apprehension probabilities in L_1 lower migration rates result in higher rate of USBP avoidance, while the opposite is true for higher apprehension rates at that level. Therefore there are two situations:

- If the probability of apprehension in a certain area is low, and the IBC chooses to stay longer in the border zone, the migrant will have a greater probability of avoiding USBP.
- If the probability of apprehension in a certain area is high, and the migrant chooses to stay longer in the border zone, the migrant will have a greater probability of being apprehended by USBP.

The same holds true for the analysis of routes 5 and 7 in USBP second layer of defense, as shown in Figure 10 at the intersection point at around $\beta = .05$.

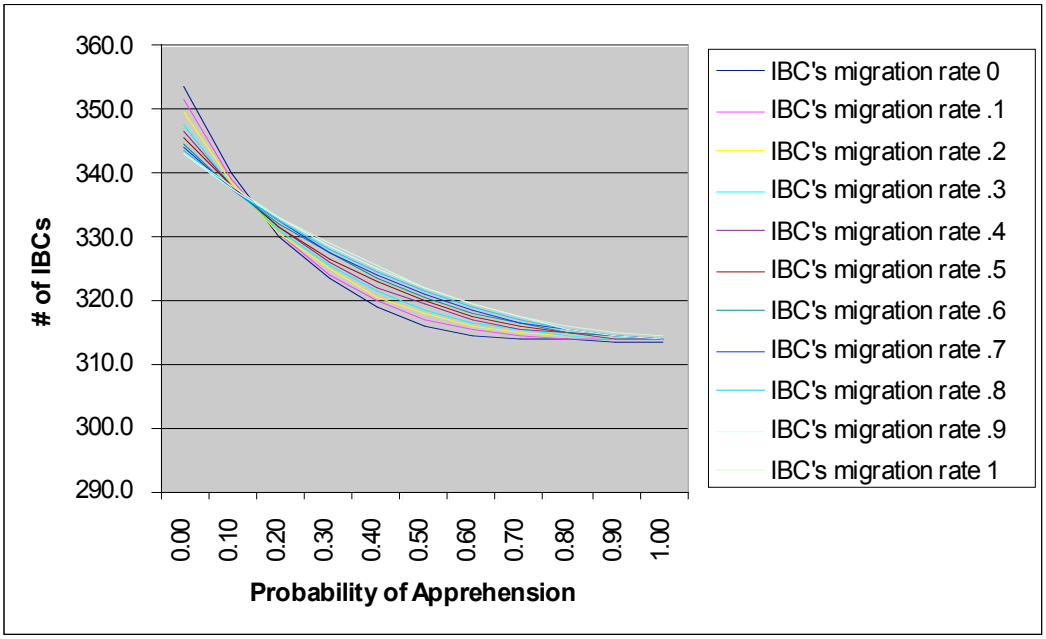

Figure 9. Number of IBCs that avoid USBP as a function of the apprehension and migration rates in Route 12, L_1.

The second layer of defense includes routes 5 and 7. The analysis for this layer of defense takes into consideration that USBP uses a concentric and tiered operational structure; therefore routes 5 and 7 are within the same station's area of responsibility. This indicates that resources employed in the second layer are shared and therefore we added routes 5 and 7 together as well as routes 11 and 13.

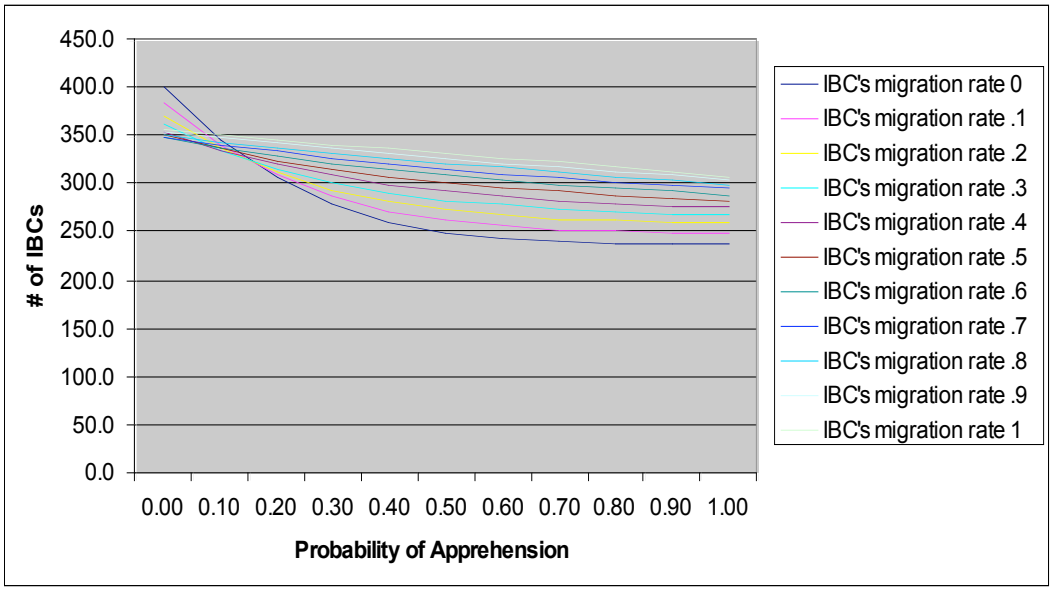

Figure 10. Number of IBCs that avoid USBP as a function of the apprehension and migration rates in Routes 5 and 7, L_2.

It is important to note that a slower migration rate is used for the second layer of defense given that the topography does not include an urban area and migrants are exposed to canyons and desert. Figure 10 demonstrates that USBP effectiveness in L_2 is lower than in L_1; demonstrating that as the migrant's traveling rate increases USBP's probability to apprehend IBCs is decreases compared to the first layer of defense.

For the third layer of defense, as with the second layer of defense, the analysis took into consideration that USBP uses a concentric and tiered operational structure. This indicates that resources employed in the third layer are shared. The third layer of defense's terrain is the most desolate and rugged compared to L_1 and L_2. In this layer migrants are exposed to many natural hazards. Therefore, a slower migration rate was used for the analysis.

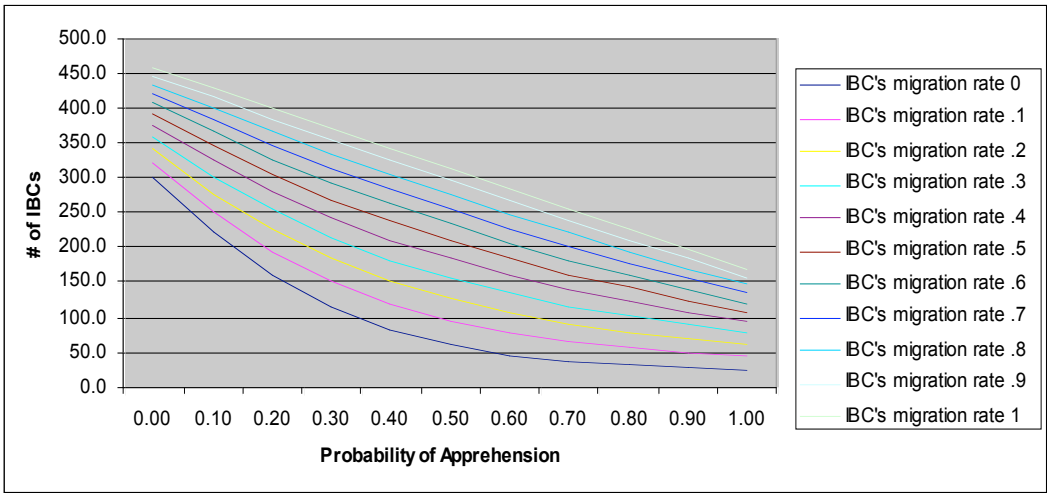

Figure 11. Number of IBCs that avoid USBP as a function of the apprehension and migration rates in Route 8 and 10, L_3.

Unlike Figures 9 and 10, Figure 11 demonstrates the effect of migration rates on USBPs' ability to apprehend in L_3; as the migrants move faster the USBP capability to apprehend remains fairly the same. The third layer of defense is not comprised of "safe heavens" or urban infrastructure for migrant's desire to remain in this area for long periods of time. Therefore, migrants will continue to travel until their destination, as the migrant moves at a faster speed USBP ability to apprehend decreases by very little. If this is the case, then the question is why is the probability of apprehension less than in the second layer of defense? This can be due to the challenges USBP faces to access and conquer all areas of the vast terrain, which is very difficult. In addition, the third layer of defense does not have "on the line" USBP resources. Therefore, migrants have a greater chance of avoiding USBP if entering the U.S. through this operational layer, but will be exposing themselves to a greater number of natural hazards.

The ASB model does not provide a solution to the current situation; instead it is a descriptive model to identify potential outcomes given the distribution of IBCs and USBP resources. From this analysis it is clear that the second layer is the least effective of the three layers currently used by USBP Tucson Sector. The applicability of the ASB model is to identify what is the outcome that the U.S. government expects from the USBP given the limitation of resources. This model will attempt to predict the amount of resources and the distribution of such in order to reach maximum apprehension of IBCs.

Given that the ASB is only a small portion of the international border, this model, with the appropriate modifications, can be applied to any peaceful geopolitical boundary subject to illegal cross-border activity. This model attempts to assist operational and strategic policy-makers in their efforts to determine how to optimally deploy resources to improve efficiency. Resources will always be limited and therefore must be meticulously allocated to provide the most benefit. This model draws from U.S. Department of Defense theories; such as intelligence preparation of the battlefield and border control models to counter-guerrilla insurgencies with the understanding the USMB is a peaceful border. Consequently, these theories have been significantly modified when applied to the realities of the Southwest border.

Current border statistics from the USBP must be input into the ASB model in order to determine optimal deployment of current border security resources in the USBP Tucson Sector. This research did not have access to the complete USBP border data, and therefore, simply considered different cases to determine efficiency of the model. In conclusion, this model identified that an efficient border security system must be accompanied by an efficient internal enforcement system. No border security system can be effective on its own, because there will always be a small number of migrants that will succeed at illegal entry. Therefore, an internal enforcement system is vital to bridge the gap and aim to reduce, rather than eliminate, the numbers of those IBCs who eventually achieve entry into the U.S. illegally. The following chapter of this thesis is a conclusion of the author's research and analysis.

VI. CONCLUSION

Post September 11, 2001, border security became part of a greater national vision of protecting the homeland from the potential entry of terrorists and weapons of mass destruction. The traditional concerns of illegal cross-border activity of rising crime in border communities, a drain on social resources, and economic concerns was augmented by the fear of another terrorist attack on U.S. soil. The USMB is a vast and rugged territory, which requires substantial resources in order to harden the border security system.

The incomplete implementation of the USBP national border security strategy and a lack of resources have resulted in the growing problem of illegal cross-border activity along the USMB. Elected officials and policy-makers continue to disagree as to the appropriate solution needed to address the challenges along the Southwest border, be they law enforcement or humanitarian. In the meantime, many lives are lost and communities suffer, while international relations become tenser. While some governmental policy decisions (i.e. Operation Gatekeeper and Operation Hold-the-Line) alleviated illegal immigration, bettered relations with Mexico and decreased crime in San Diego and El Paso, at the same time these same decisions relocated the problem to other vulnerable and porous areas along the border. It is clear that the U.S. faces many challenges in its efforts to tackle illegal cross-border activity: limited financial and personnel resources, numerous the layers of federal, state, local, and tribal government, and diverse cultural and human dimensions.

Like criminal activity within our communities, law enforcement of illegal cross-border activity is subject to the *balloon effect,* as evidenced by Operation Gatekeeper and Operation Hold-the-Line in San Diego and El Paso, respectively. The consequences of the San Diego and El Paso Operations resulted in an increase in illegal crossing at the ASB – now the largest area of illegal border crossing traffic in the nation. The USBP Tucson Sector divided the area of operation among 8 border stations with each responsible for a section within the sector.

While the efforts of Congress and the USBP continue, the illegal immigration problem persists. The current deployment and employment of resources must be revisited to increase efficiency and alleviate the challenges along the USMB. The application of force along the border without the proper use of intelligence to modify the use of force in a timely and adequate manner along the USMB could potentially accelerate the "balloon effect." Therefore, this thesis proposes the use of the ASB model or a similar border model to allow strategists to minimize the geographical displacement effects prior to applying force along the USMB. The appropriate employment and deployment of border security resources can minimize illegal cross-border activity and the border's vulnerabilities.

Along the Southwest border, this year chronicled a record number of migrant deaths in the desert – over 400 deaths along the Southwest border, an alarming humanitarian concern that only adds to the reasons to examine the international border.[92] This research presents a neutral, mathematical proposal aimed at alleviating the challenges along the ASB. It is clear that illegal cross-border activity is not the cause of random events, instead of organized and thought-out efforts by IBCs. Given this notion, the challenges of the USMB can be tackled logically and through the use of mathematical models. This thesis studies and applies the complexities of the different variables and parameters of illegal cross-border activity through the use of the ASB model. The ASB model is only one small portion of the international border and presents a starting point for policymakers and operational planners in addressing the ASB.

Through the research and this thesis it became clear that USBP must be using mathematical models to tackle border issues. However, if this is the true and given that there are many stakeholders in border security efforts, particularly because the international boundary is surrounded by private, local, tribal and state land, which all are partners in securing the homeland. A partnership begins through sharing ideas, therefore it is important for the USBP begin to share such models and develop joint strategies with the stakeholders. This will produce results from modeling the USMB leading to the potential social benefits, identified in Tables 7 and 8, respectively. The below results and

[92] Ioan Grillo, "U.S. border bill blasted by Mexican government," *Arizona Republic Newspaper*, (December 17, 2005).

benefits are not the direct cause and effect of each other, per se. Instead, the results and benefits illustrate a combined policy and operational effort in securing the border that can be drawn from the proper use of a model such as the ASB, to develop logical and effective policy.

Modeling the USMB
Optimal border security resource deployment;
The understanding and forecast of IBCs patterns and activities
Funding optimization, therefore, providing more resources to allocate in other geographical areas or programs;
Minimize illegal cross-border activity;
A mathematical model which can be replicated and successfully applied first in other USBP sectors

Table 7. Modeling the USMB Summary

Social Benefits
Decrease the number of deaths of IBCs in the desert;
Decrease crime in general;
Improving the quality of life border communities;
Increasing security and economic prosperity within the border region;
Improved international relations in general

Table 8. Social Benefits Summary

The ASB model demonstrates that by increasing border security enforcement efforts, it may augment humanitarian concerns along the USMB. As migrants move away from high enforcement areas to low enforcement areas, in other words, they move away from areas where the border security enforcement is more effective, and are thus exposed to greater natural hazards. Therefore, as operational planners and policy makers develop

new strategies, these humanitarian concerns and consequences need to be taken into consideration in order to reduce deaths in the desert and improve bi-national relations with Mexico.

A secure homeland is only possible through the collaboration and shared resources of all stakeholders at all levels of government with the integration of intelligence in order to prevent and protect the nation. Accordingly, Secretary Michael Chertoff states, "[i]n our complex free society, there is no perfect solution to address every security concern. But by working together collectively to analyze threats, understand our capabilities, and apply resources intelligently, we can manage risk."[93] Therefore, beyond the identified results and benefits presented above, there is a dire need to input human intelligence data on existing activities and the use of the existing border security resources into the ASB model. The introduction of human intelligence data is a vital component in ensuring that the model is updated and applicable to the current situation faced by the USBP along the affected area.

As USBP assets increase along the border, the model will become more complex. Another contributing factor, as described earlier, is that Coyotes adapt tactics and techniques to the USBP strategies and operations. The constant input of updated human intelligence data into the model will ensure optimization of resources, even in a changing environment, through a forecast of illegal cross-border activity along the USMB. It is recommended that the USBP intelligence unit work closer with USBP Mexico Liaison units to receive more updated information in regards to smuggler staging area tactics. The U.S. government may consider identifying an agency or a unit within USBP to constantly maintain and continue analysis of the USMB; this unit is to collaborate with all stakeholders. This collaborative group is to develop policies and ensure proper implementation and complementary policy that is productive and prevents illegal cross-border activity.

[93] Michael Chertoff, U.S. Department of Homeland Security, Secretary, "Interim National Preparedness Goal," U.S. Department of Homeland Security, Press Release (April 1, 2005).

LIST OF REFERENCES

Bolkcom, Christopher. "Homeland Security: Unmanned Aerial Vehicles and Border Surveillance." *Congressional Research Service,* February 7, 2005.

Bonner, Robert C. "National Border Patrol Strategy: Message from the Commissioner." U.S. Customs and Border Protection, Office of Border Patrol and the Office of Policy and Planning. September 2004.

Bureau of Population, Refugees and Migration. "Migration and Refugee Assistance: Emergency Refugee and Migration Assistance FY2003." U.S. State Department. October 2002. http://www.state.gov/g/prm/rls/rpt/2002/14280.htm (accessed January 28, 2006).

Bush, George W. *Fact Sheet on the Security and Prosperity Partnership on North America*. Washington, D.C., Government Printing Office, March 23, 2005. http://www.whitehouse.gov/news/releases/2005/03/20050323-4.html (accessed January 11, 2006).

Chertoff, Michael. U.S. Department of Homeland Security, Press Release on April 1, 2005. http://www.dhs.gov/dhspublic/display?content=4420 (accessed April 1, 2005).

Chertoff, Michael. "DHS Expands Operation Stonegarden to Bolster Border Security Efforts." U.S. Department of Homeland Security, Press Release on January 6, 2006 http://www.dhs.gov/dhspublic/display?content=5332 (accessed January 6, 2006).

Centro de Investigaciones Económicas y Política de Acción Comunitaria. "Guerra Mundial: Consecuencias Para México." November 21, 2001. http://www.ciepac.org/bulletins/200-300/bolec267.htm (accessed February 21, 2006).

Cornelius, Wayne. *Controlling 'Unwanted' Immigration: Lessons from the United States, 1993 – 2004*. San Diego: University of California Center for Comparative Immigration Studies, December 2004.

Council on Foreign Relations. "The Money: Drying Up the Funds for Terror." http://www.cfrterrorism.org/responses/money.html (accessed December 6, 2004).

Council on Foreign Relations. "What is Narcoterrorism?" http://cfrterrorism.org/terrorism/narcoterrorism.html (accessed February 10, 2005).

General Consulate of Mexico. "Economic Impact of the Mexico-Arizona Relationship." Thunderbird Mexican Association, Academic Research Project, May 2003.

Grillo, Ioan. "U.S. Border Bill Blasted by Mexican Government." *The Arizona Republic Newspaper*, December 17, 2005.

Humane Borders. 2004 Migrant Deaths, Water Stations, and Rescue Beacons. http://www. http://www.humaneborders.org/news/images/migrantdeaths_0004.jpg (accessed June 2005).

Hutchinson, Asa. "At Six Months, Arizona Border Control Initiative Marks Successes: DHS To Extend Multi-Agency Program Into Fall." *Inside ICE* I, Issue 12. http://www.ice.gov/graphics/news/insideice/articles/insideice_092704_Web6.htm (accessed February 26, 2006).

Interpol. "People Smuggling." December 6, 2004. http://www.interpol.int/public/THB/PeopleSmuggling/Default.asp/ (accessed December 6, 2004).

Jenkins, Brian M., and Paul K. Davis. *Deterrence and Influence in Counterterrorism: A Component in the War on al Qaeda.* Santa Monica, CA: RAND, 2002.

Kyl, Jon. "Arizona: a 'Terrorist Corridor?'" *The Arizona Conservative,* August 27, 2004. http://www.azconservative.org/Kyl_TerrorismCorridor.htm (accessed December 6, 2004).

Marshall, Donnie. *Testimony before the Subcommittee on General Oversight and Investigation of the Committee on Banking and Financial Services on September 5, 1996*. http://www.fas.org/irp/congress/1996_hr/s960906m.htm (accessed January 28, 2006).

McCauley, Clark. "Psychological Issues in Understanding Terrorism and the Response to Terrorism." *Psychology of Terrorism* 3, 3-30. Westport, CN: Praeger, 2002.

Mexican Bureau of the Census. Population Statistics by State, 2000. http://www.inegi.gob.mx/est/contenidos/espanol/proyectos/coesme/programas/exporta.asp.

Napolitano, Janet. "The National Spotlight is on the Arizona Border." *PHX News.com.*, November 30, 2005. http://www.phxnews.com/fullstory.php?article=28861 (accessed December 18, 2005).

Passel, Jeffrey. "Unauthorized Migrants: Numbers and Characteristics." Pew Hispanic Center, June 14, 2005.

Placido, Anthony P. *Testimony before the House Committee on Government on Government Reform Subcommittee on Criminal Justice, Drug Policy and Human Resources on June 14, 2005.* http://www.dea.gov/pubs/cngrtest/ct061205.html (accessed December 25, 2005).

Schilling, G.F. *Analytic Model of Border Control*. Santa Monica, CA: RAND, December 1970.

Schmitt, Richard B., H.G. Reza, and Richard Boudreaux. "U.S. Fears Terrorism via Mexico's Time-Tested Smuggling Routes." *SITE Institute,* September 15, 2004. http://www.siteinstitute.org/bin/articles.cgi?ID=news18904&Category=news&Subcategory=0 (accessed December 6, 2004).

Seghetti, Lisa K., Larry Storrs, Nathan Brooks, and Stephen Viña. "Border Security and the Southwest Border: Background, Legislation, and Issues." *Congressional Research Service,* September 28, 2005.

Strohm, Chris. "Arizona Border Patrol Chief Cites Need for More Resources, Personnel." *GOVEXEC.com*, April 25, 2005. http://govexec.com/dailyfed/0405/042505c1.htm (accessed February 25, 2006).

U.S. Border Patrol. Apprehension Statistics 1993 -2004: Data Presented in Actual Numbers and as a Percentage of Total Southwest Apprehensions. http://www.lawg.org/docs/apprehension%20stats.pdf (accessed June 20, 2005).

U.S. Border Patrol (unofficial website). U.S. Border Patrol Station Map. http://www.honorfirst.com/stationlist.htm (accessed August 15, 2005).

U.S. Bureau of the Census. *Annual Estimates of the Population for Counties of Arizona: April 1, 2000 to July 1, 2004*. Washington D.C.: Population Division, U.S. Census Bureau, 2005.

U.S. Customs and Border Protection. "Repatriation: No Easy Answers." *Customs and Border Protection Today,* July/August 2004. http://www.cbp.gov/xp/CustomsToday/2004/Aug/repatriation.xml (accessed January 28, 2006).

U.S. Department of Justice, Office of Justice Programs. *Mapping Crime: Understanding Hot Spots*. Washington, D.C.: National Institute of Justice, August 2005. http://www.ncjrs.gov/pdffiles1/nij/209393.pdf (accessed February 23, 2006).

U.S. Department of State. "Border Official Points to Successful Southern Border Initiatives." *USINFO.STATE.GOV*, June 7, 2005. http://usinfo.state.gov/gi/Archive/2005/Jun/08-215133.html (accessed January 19, 2006).

U.S. Department of State. "Human Trafficking: Transnational Crime and Links with Terrorism." *USINFO.STATE.GOV*, June 25, 2003. http://usinfo.state.gov/eap/Archive_Index/Human_Trafficking_Transnational_Crime_and_Links_with_Terrorism.html .

U.S. General Accounting Office. "Border Control: Revised Strategy is Showing Positive Results," December 1994. http://www.druglibrary.org/SCHAFFER/govpubs/gao/pdf23.pdf (accessed February 25, 2006).

U.S. Environmental Protection Agency. Text of the La Paz Agreement (including Annex I-V) between the U.S. and Mexico signed on August 14, 1983. http://yosemite.epa.gov/oia/MexUSA.nsf/La+Paz+Agreement+-+Web?OpenView&ExpandView (accessed February 23, 2006).

U.S. Office of Homeland Security. *National Strategy for Homeland Security,* July 2002.

Vann, Bill. "Five Years of Operation Gatekeeper: U.S. Border Crackdown Sends Deaths Souring." *World Socialists Website*, June 25, 1999. http://www.wsws.org/articles/1999/jun1999/ins-j25.shtml (accessed February 26, 2005).

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Ft. Belvoir, Virginia

2. Dudley Knox Library
   Naval Postgraduate School
   Monterey, California

3. Governor Janet Napolitano
   Arizona Governor's Office
   Phoenix, Arizona

4. Frank Navarrete
   Arizona Office of Homeland Security
   Phoenix, Arizona

5. Robert Bach
   Naval Postgraduate School
   Monterey, California

6. Moshe Kress
   Naval Postgraduate School
   Monterey, California